

FIG. 1

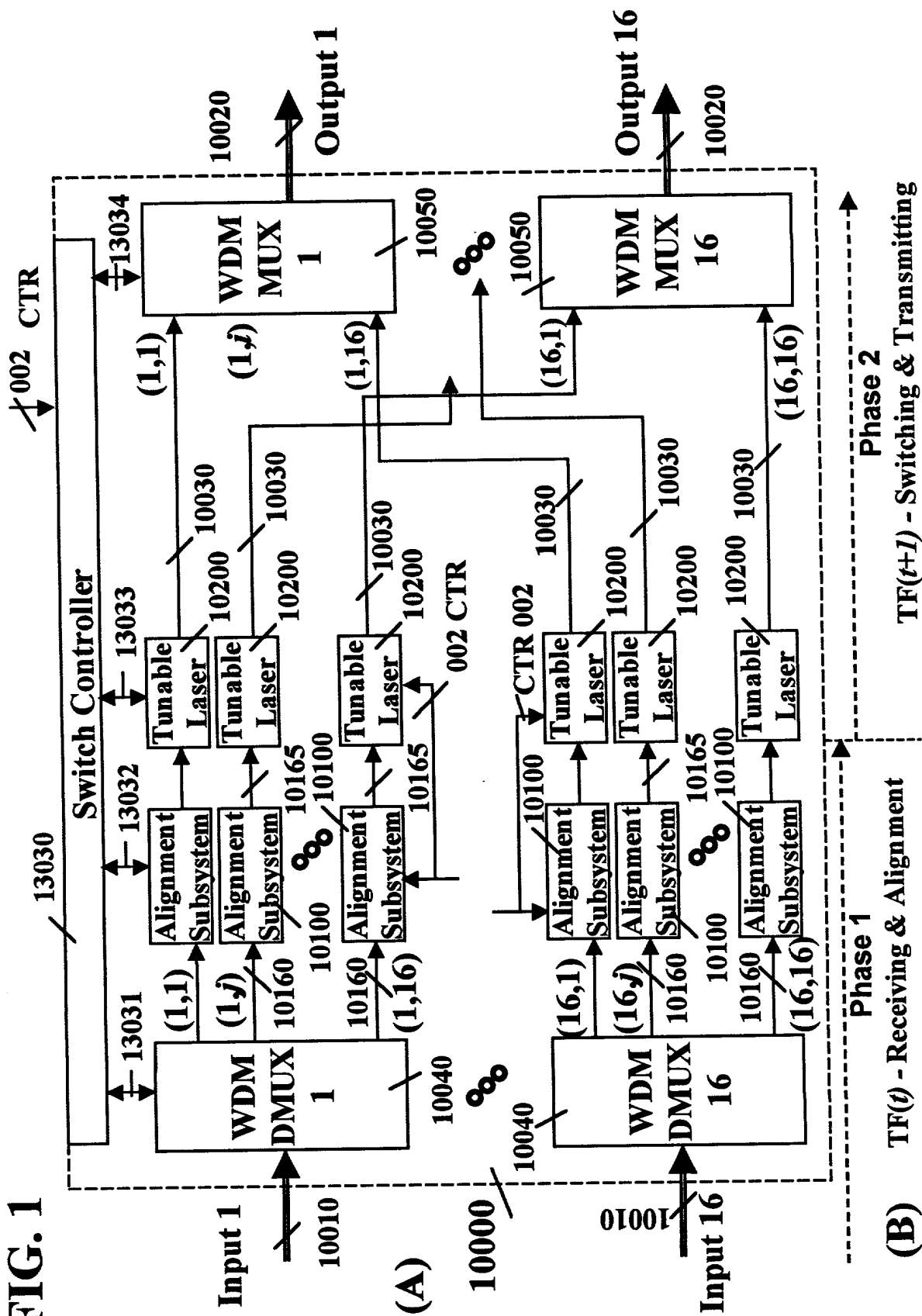


FIG. 2

Example:

TF1=15.325 microseconds - High_capacity = OC-192

TF2 = 125 microseconds - Low_capacity = OC-3

$\Rightarrow c = 64 = (\text{OC-192}/\text{OC-3})$

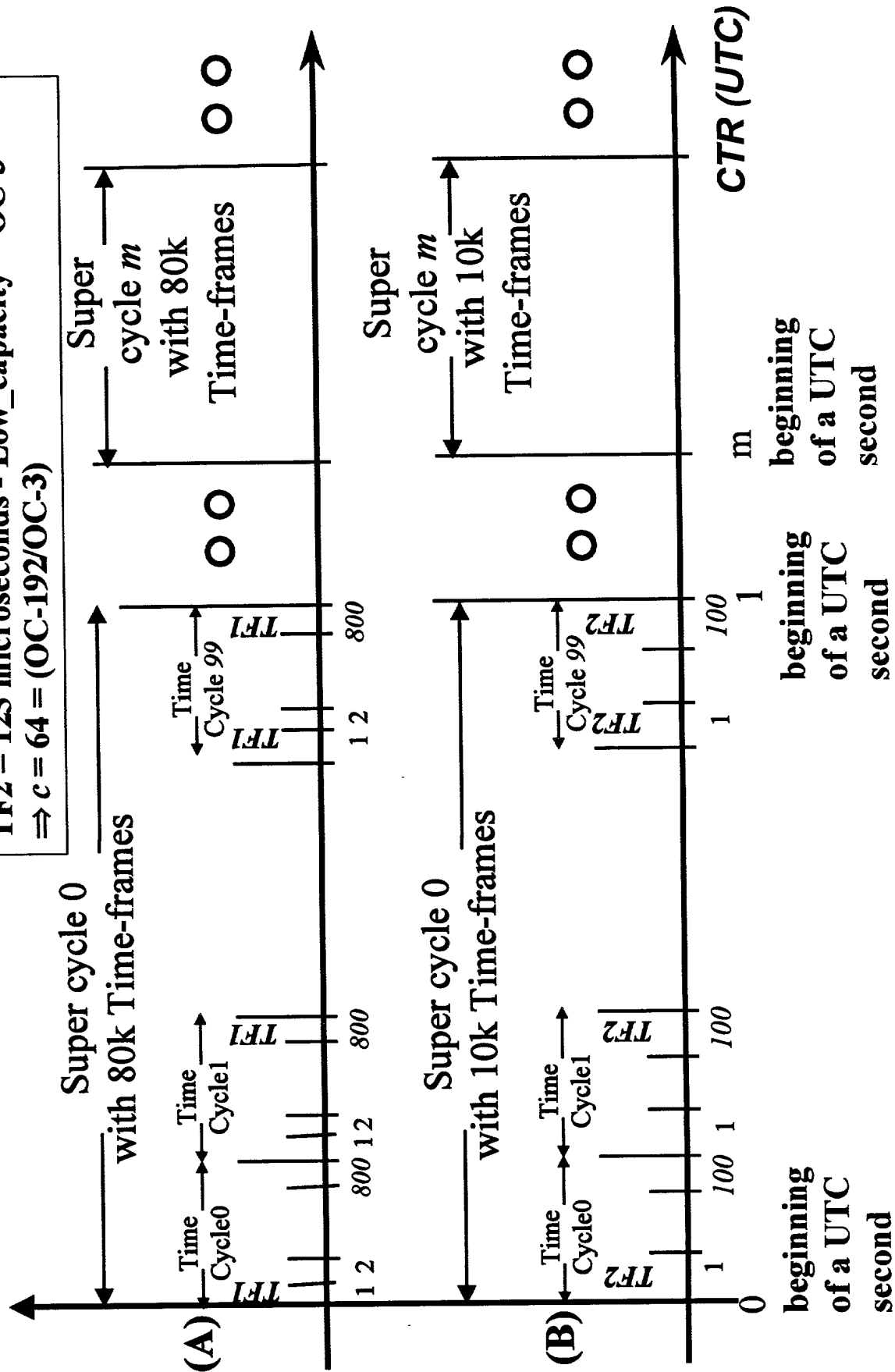
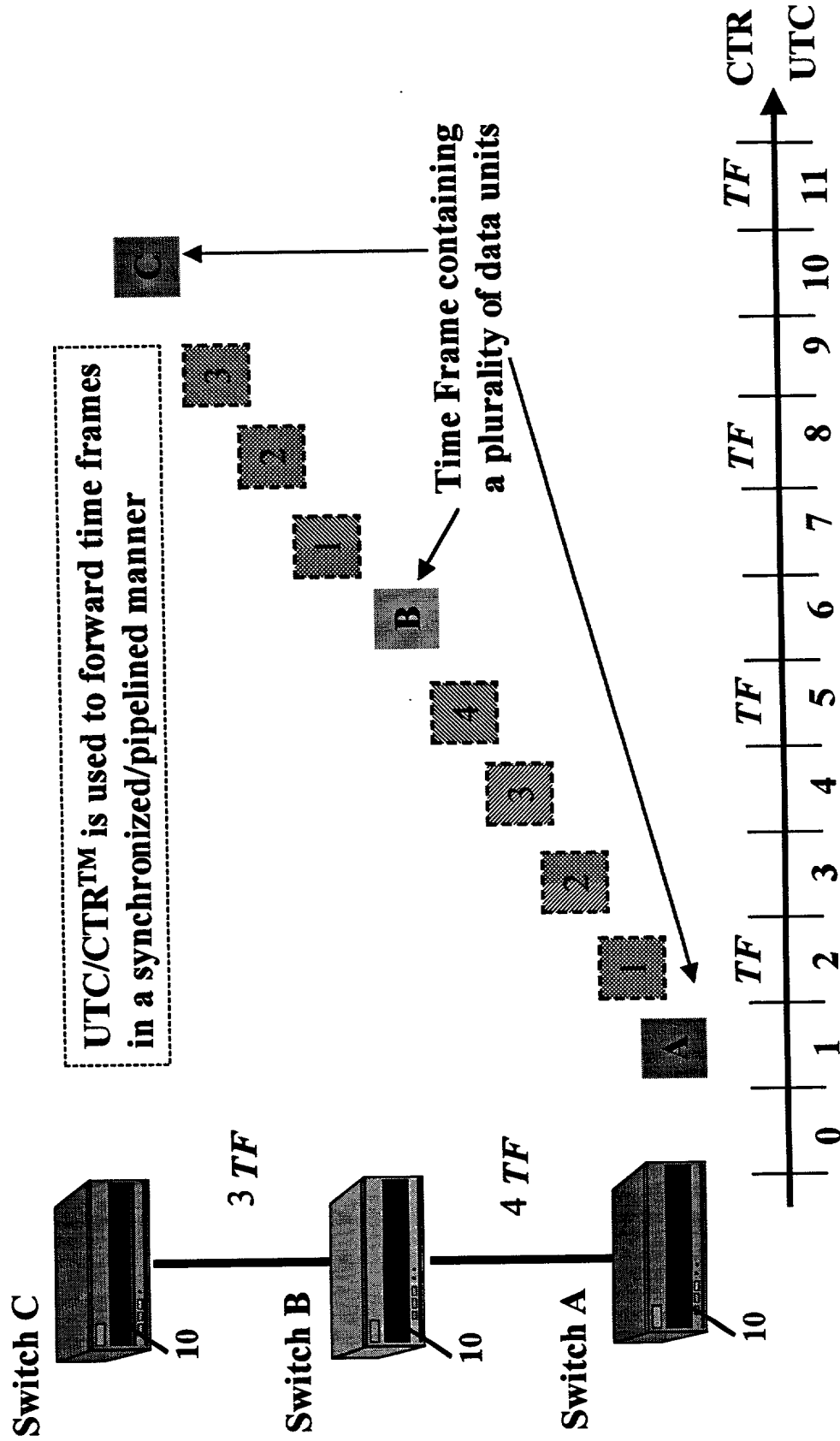
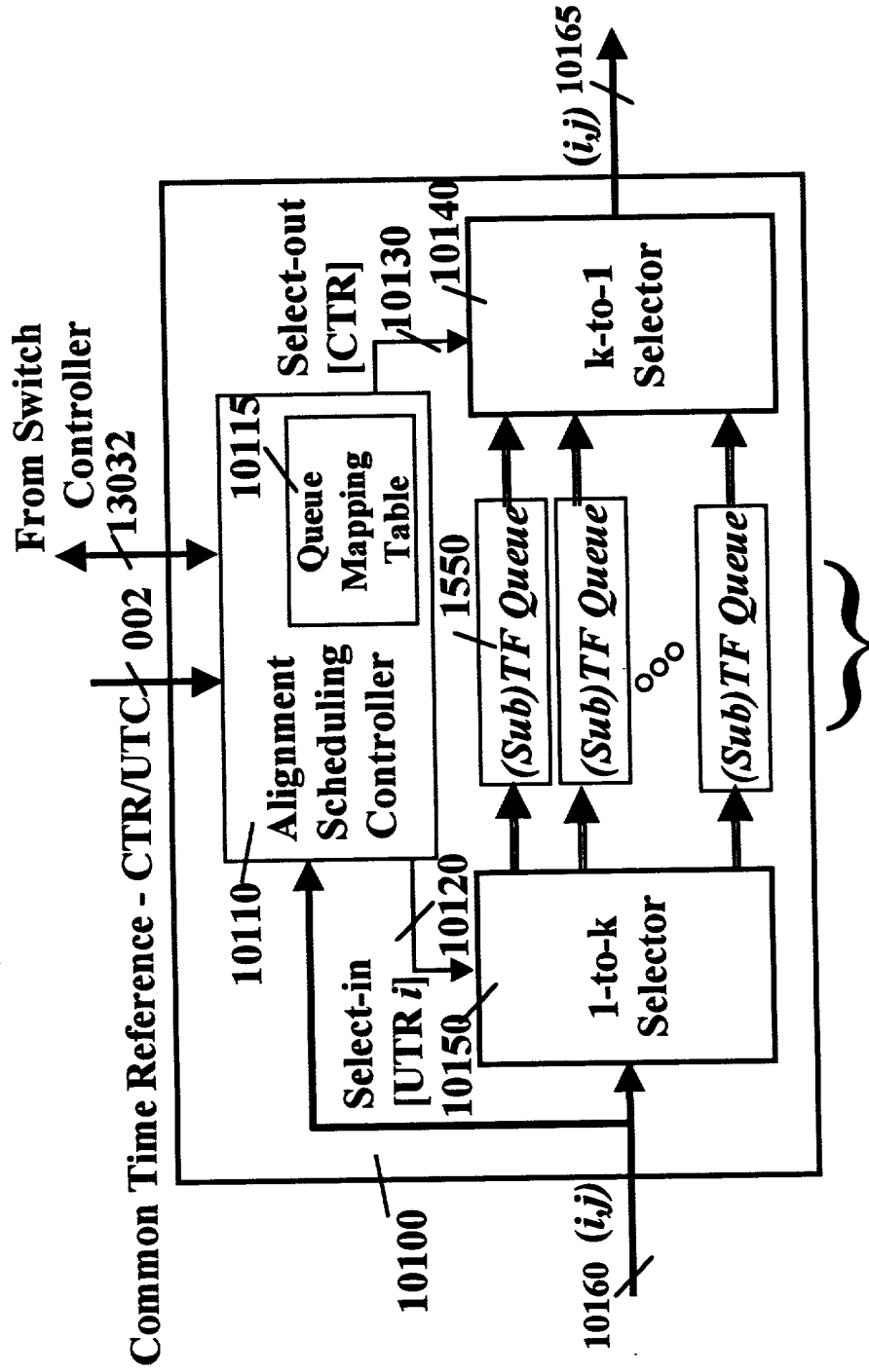


FIG. 3





Alignment Subsystem for high capacity Channel j at Input Interface i with a Plurality of Sub-Time Frame Queues

TF i_j : Time frame duration on channel j at Input Interface i .
UTR i : UTR on link connected to Input Interface i

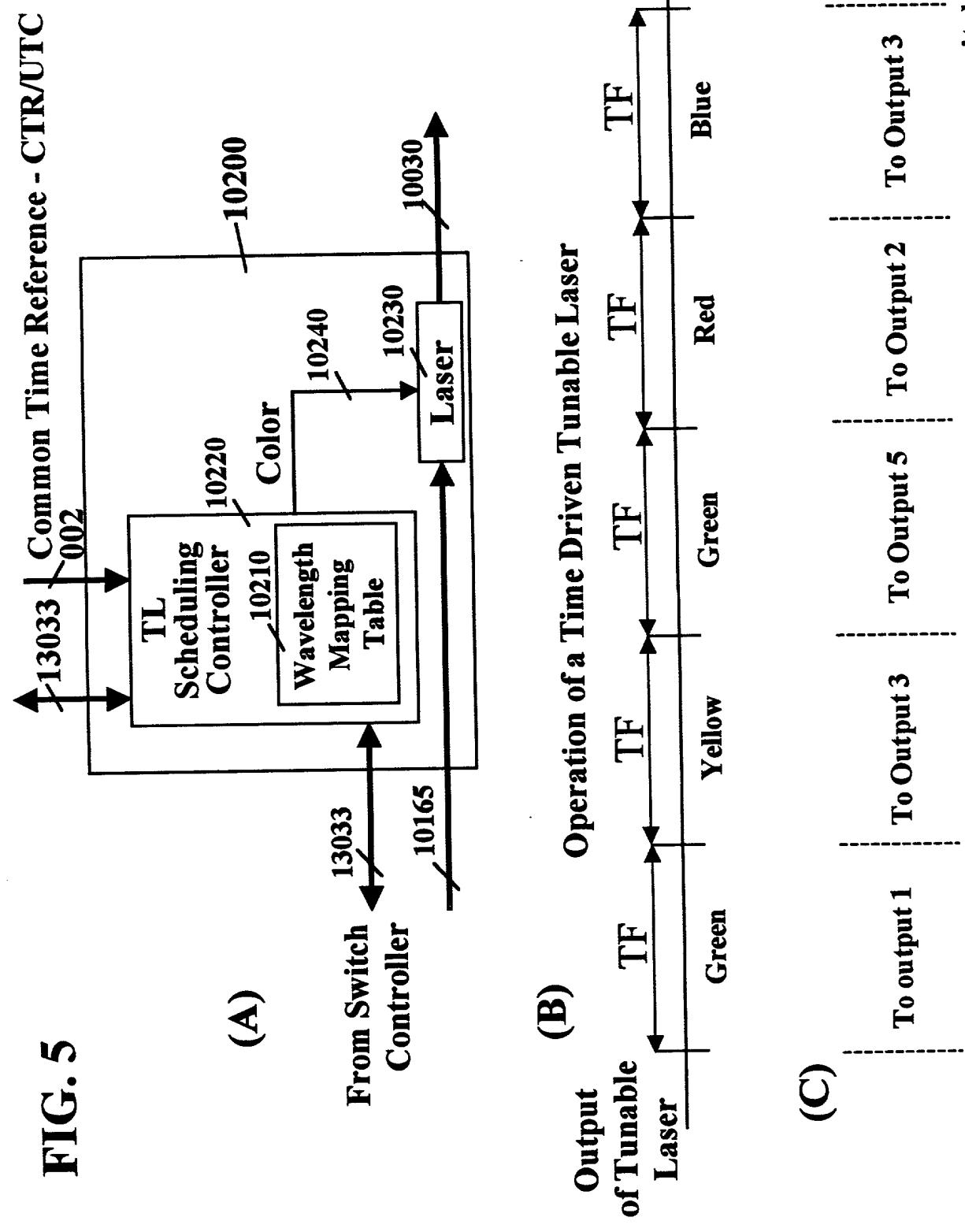


FIG. 6

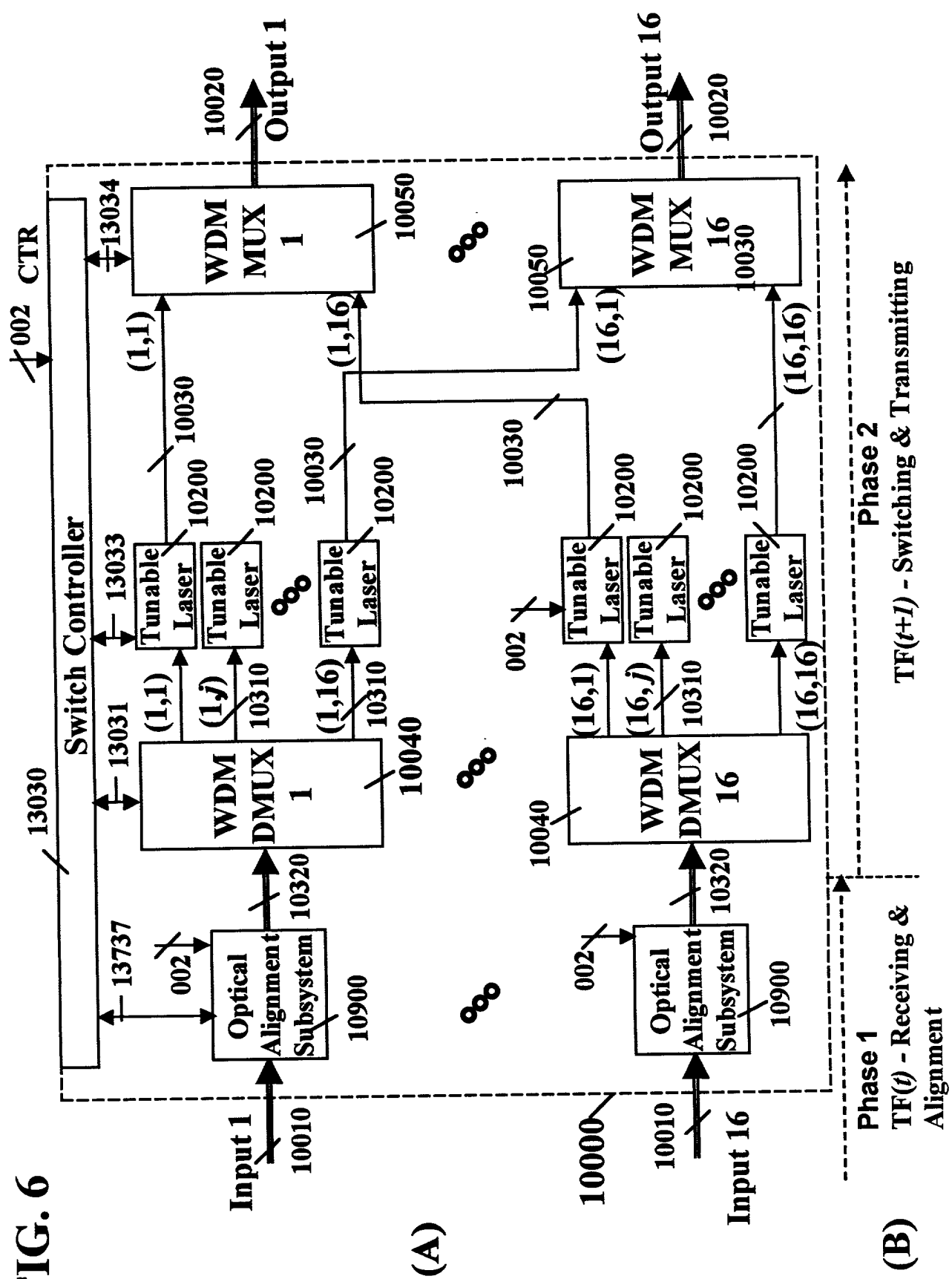


FIG. 7

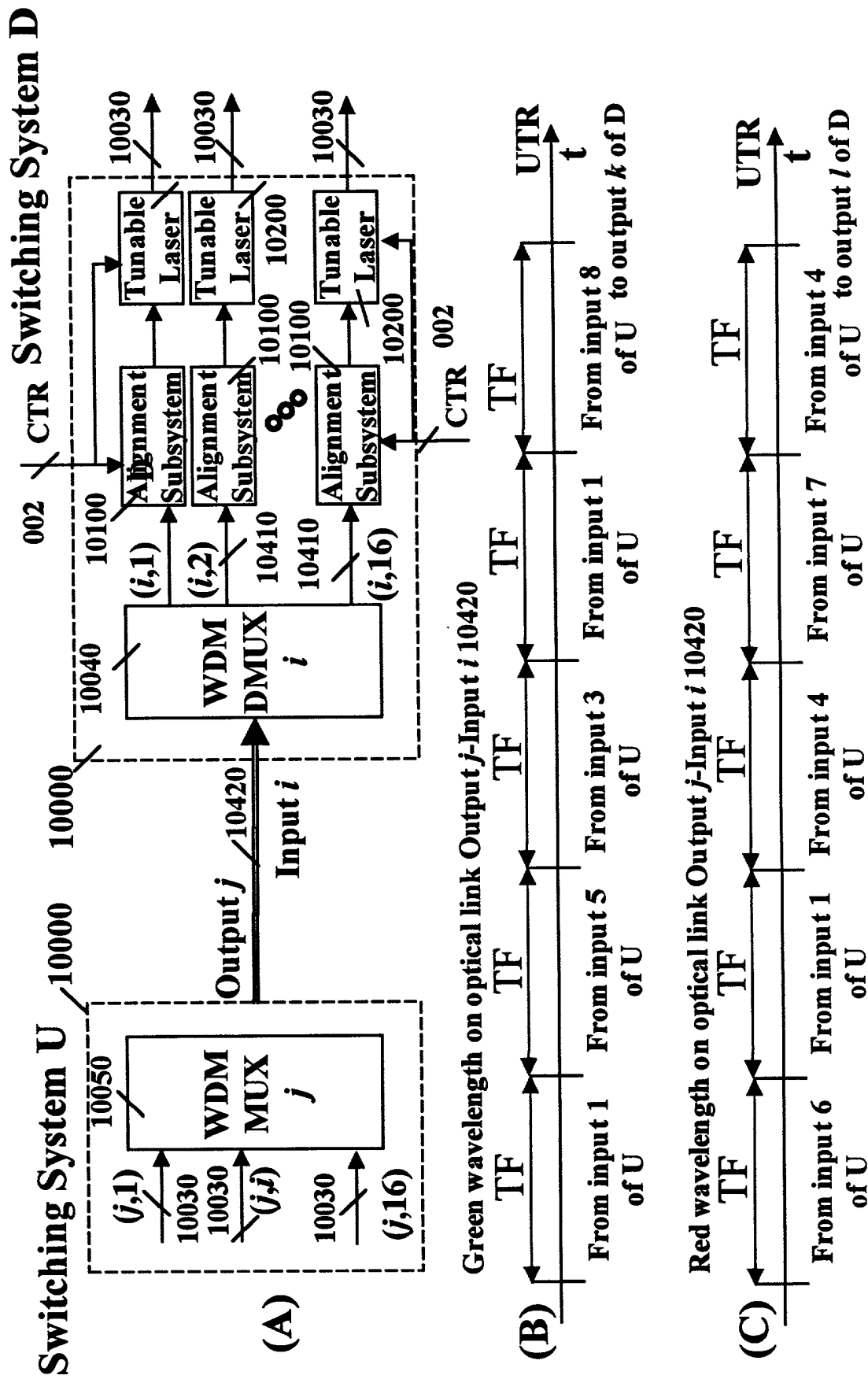


FIG. 8

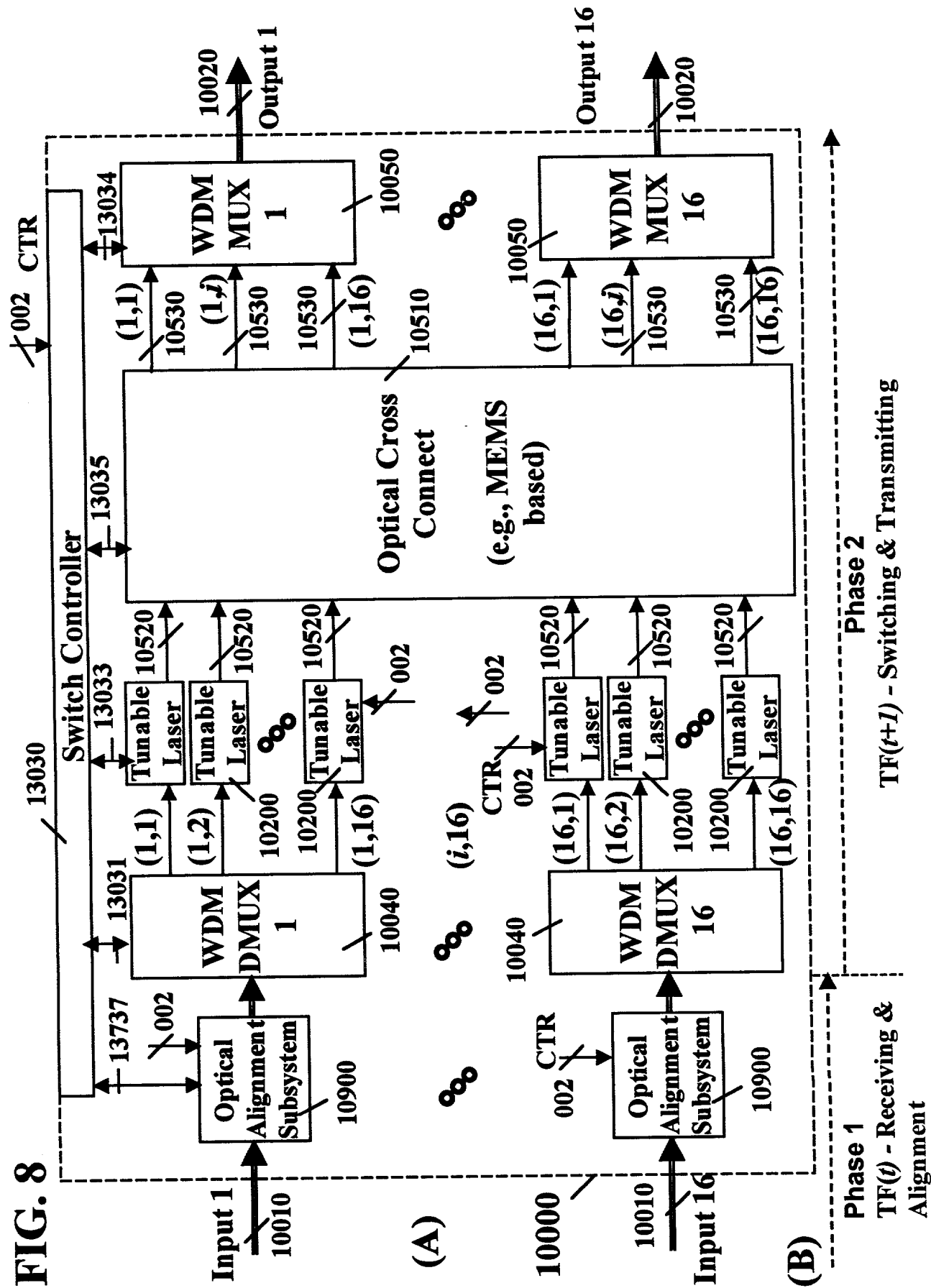


FIG. 9

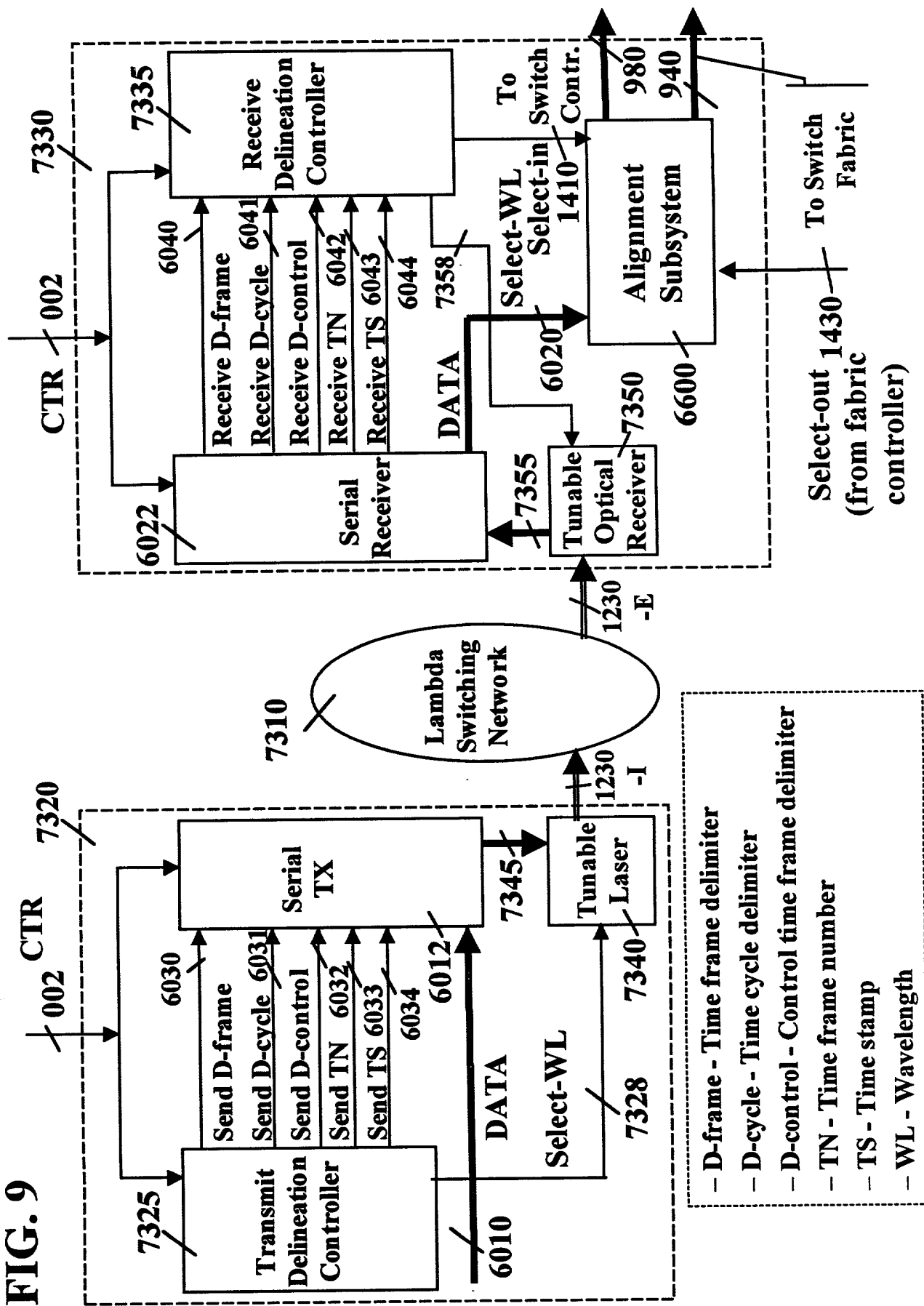
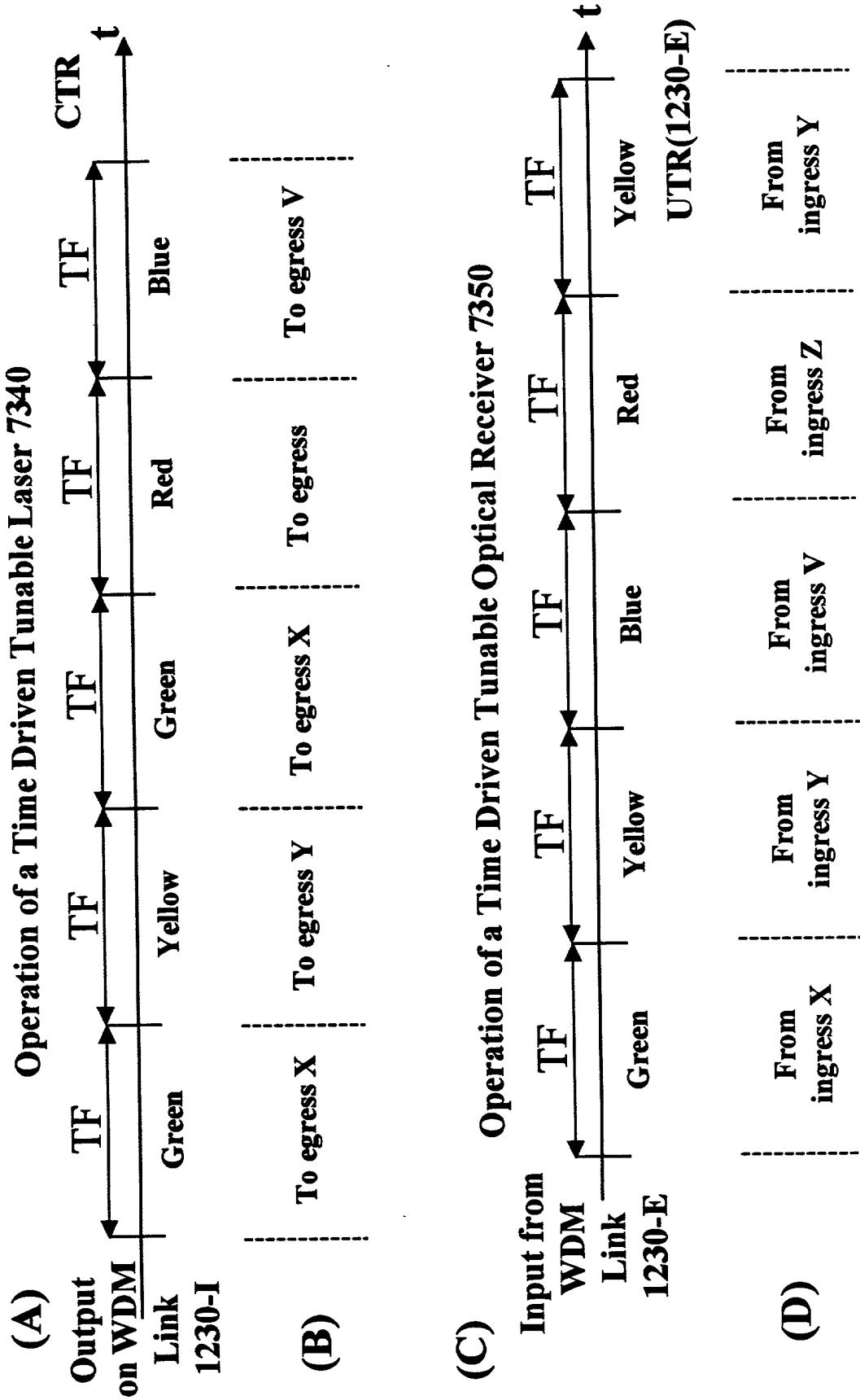


FIG. 10



CTR

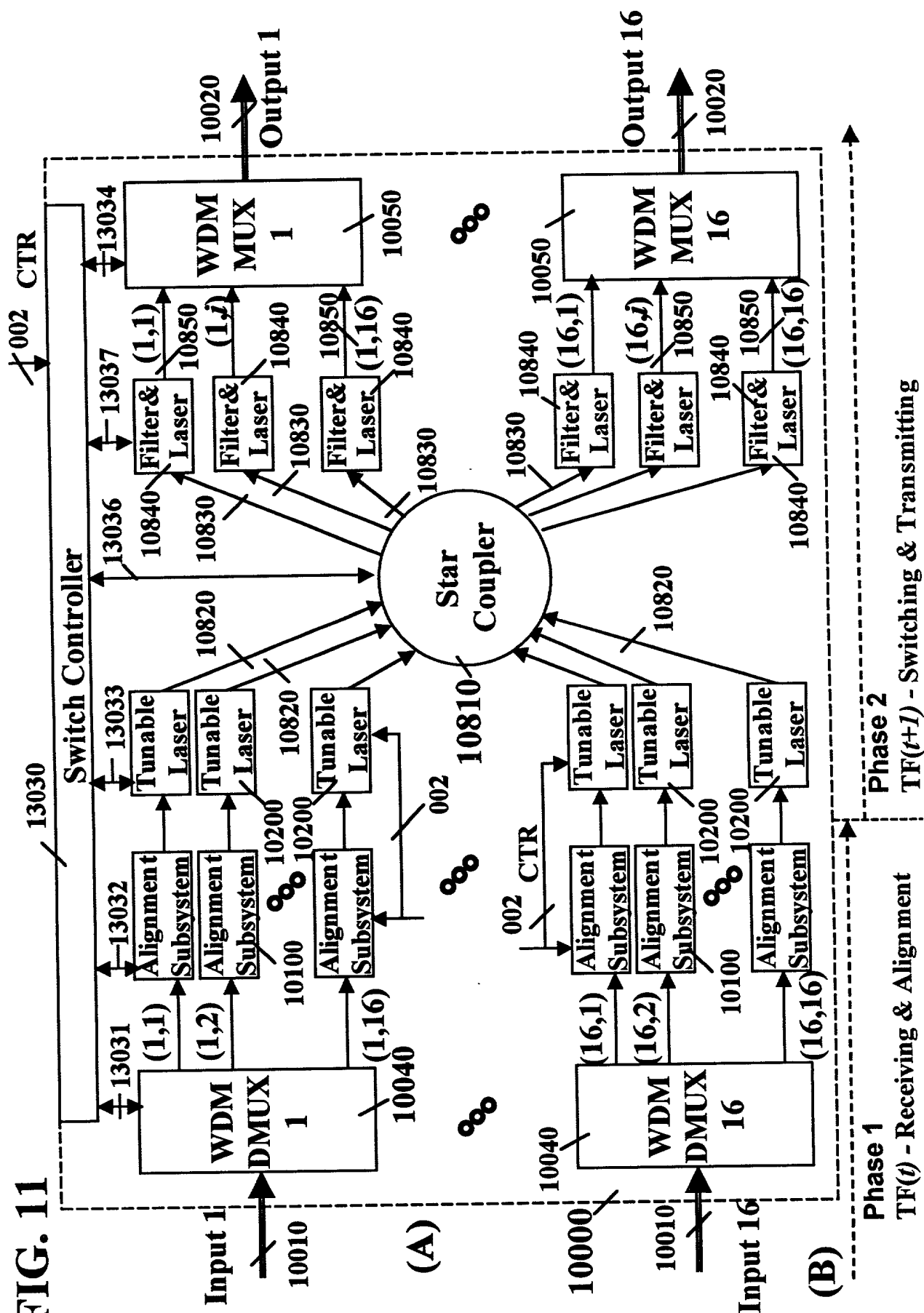
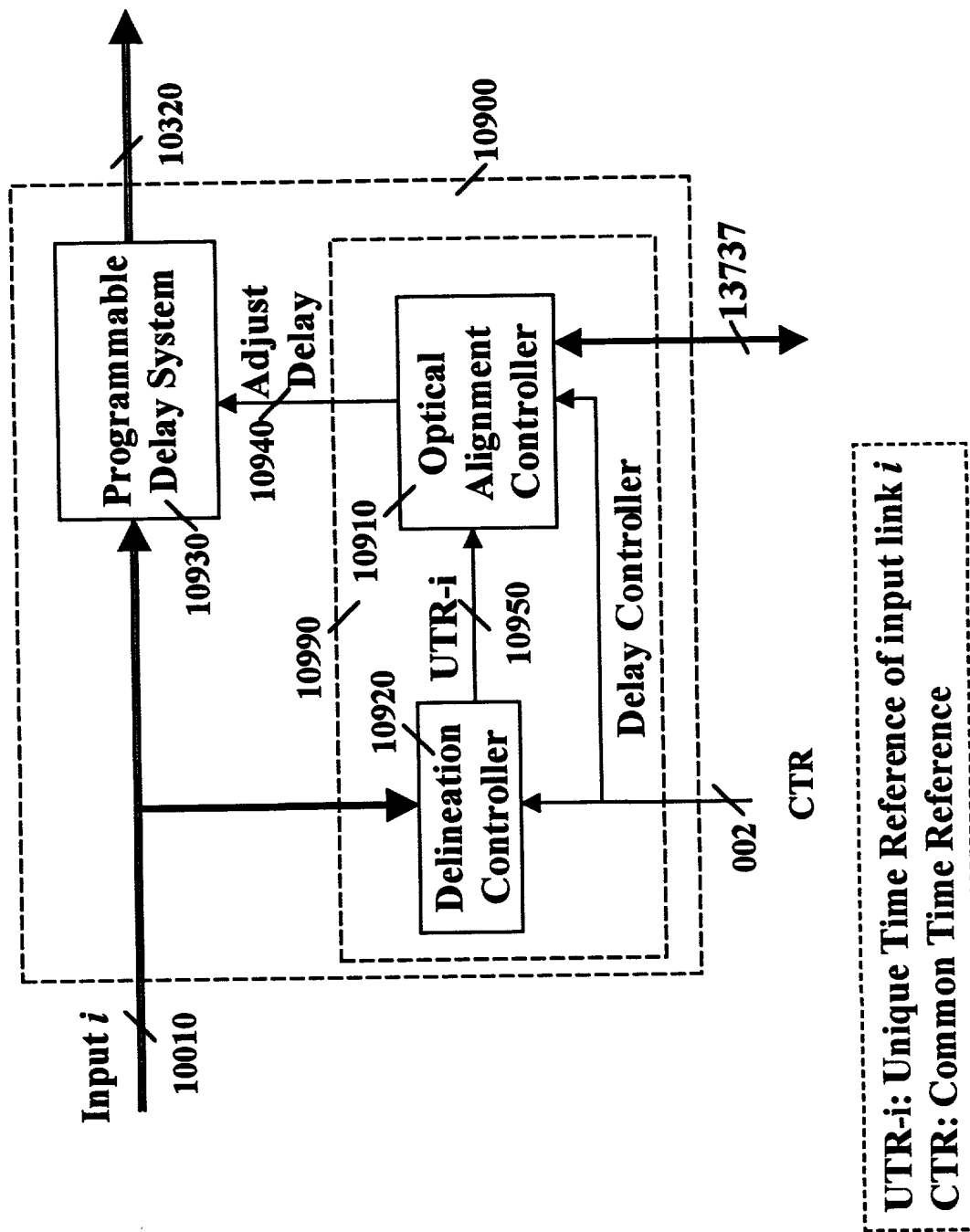


FIG. 12



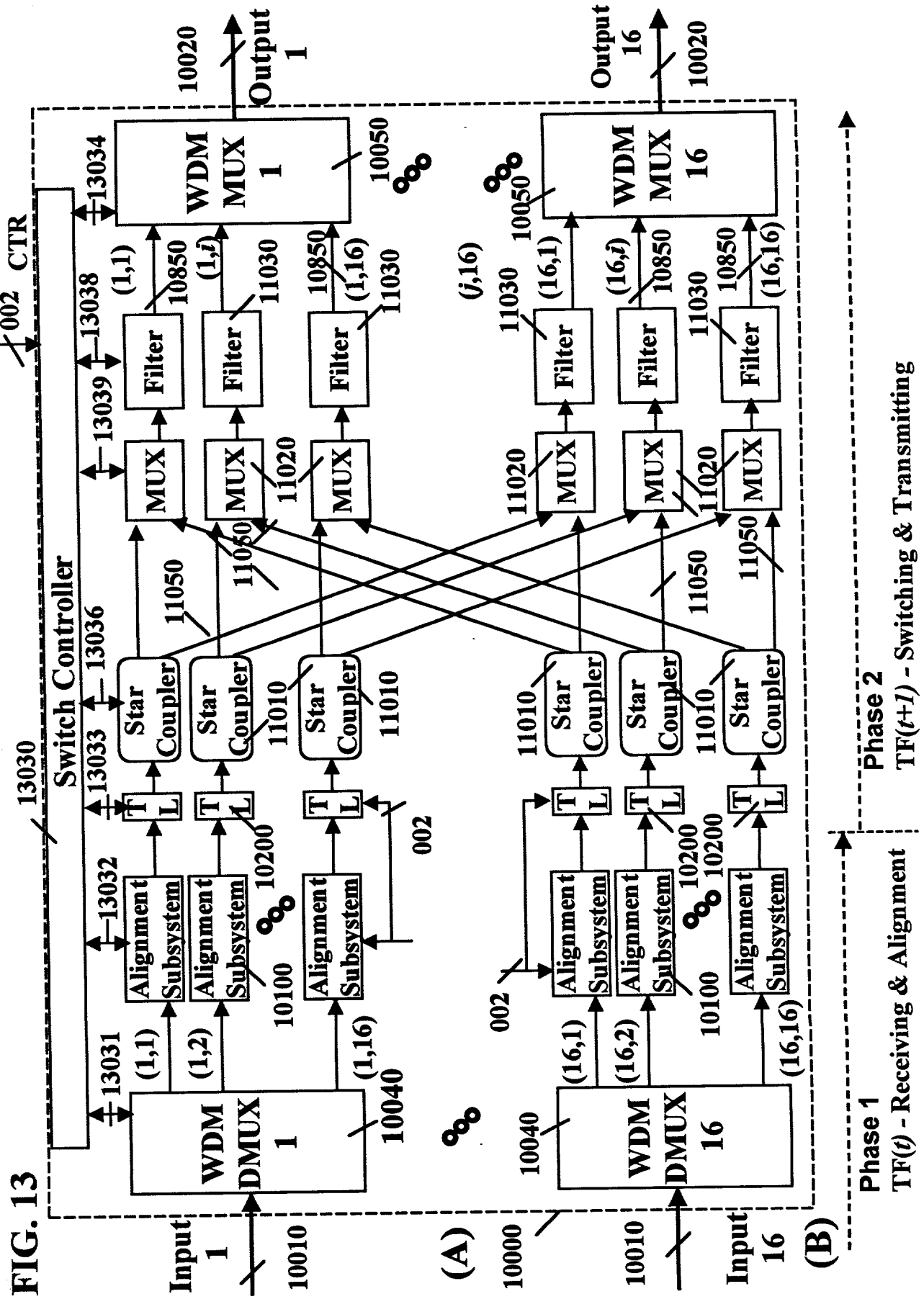
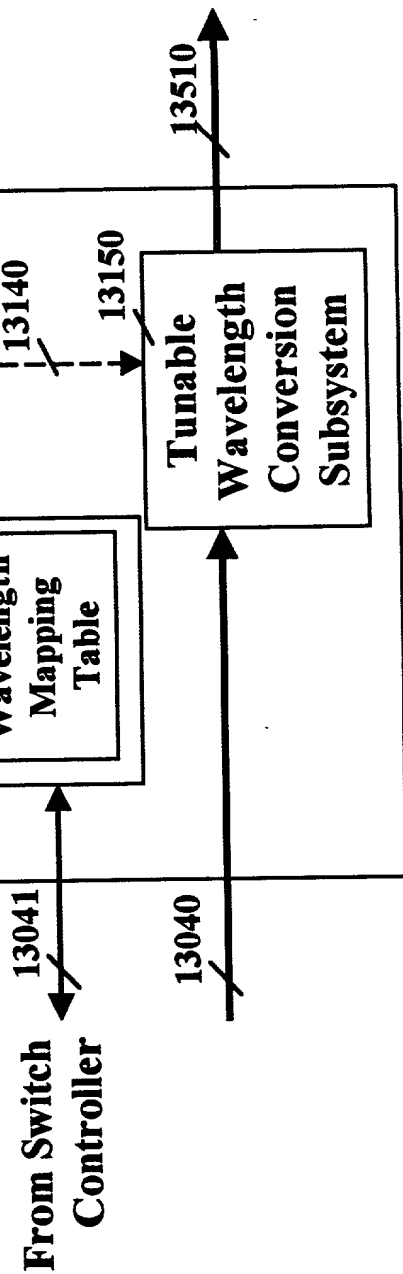


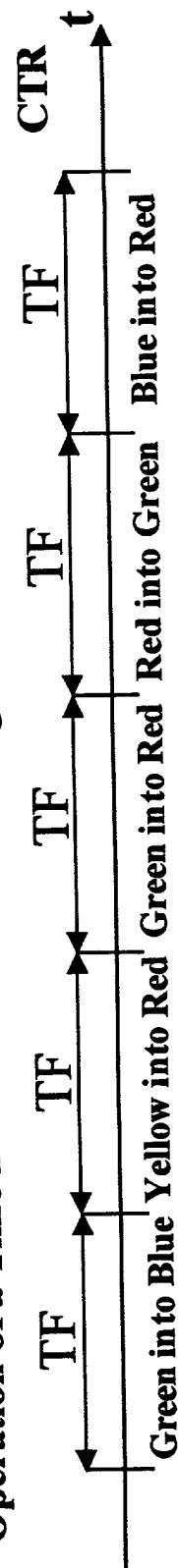
FIG. 15

(A)



(B)

Operation of a Time Driven Tunable Wavelength Conversion Subsystem 13150



Wavelengths received 13040 and emitted 13510 by
 Tunable Wavelength Conversion Subsystem 13150

FIG. 16

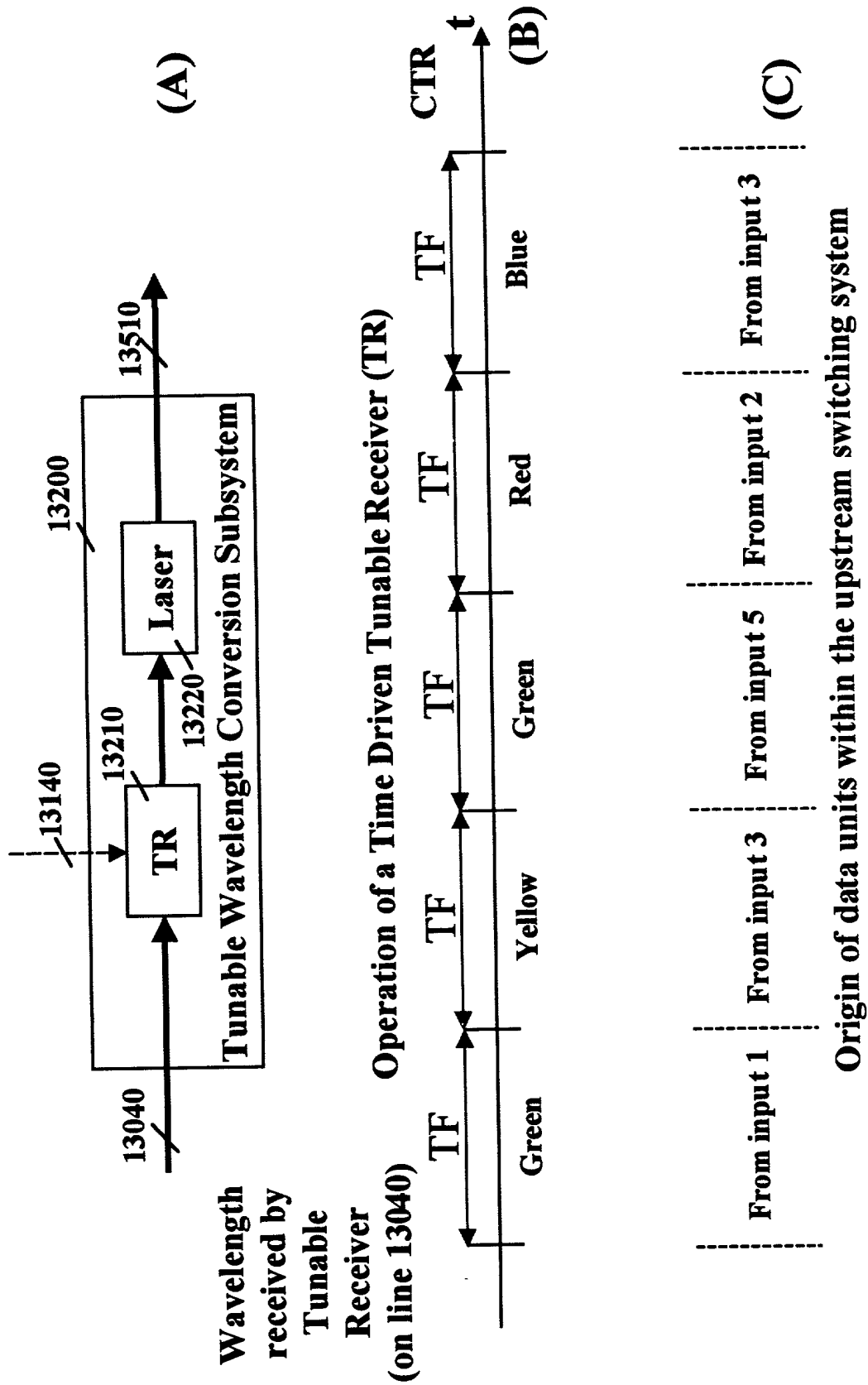


FIG. 17

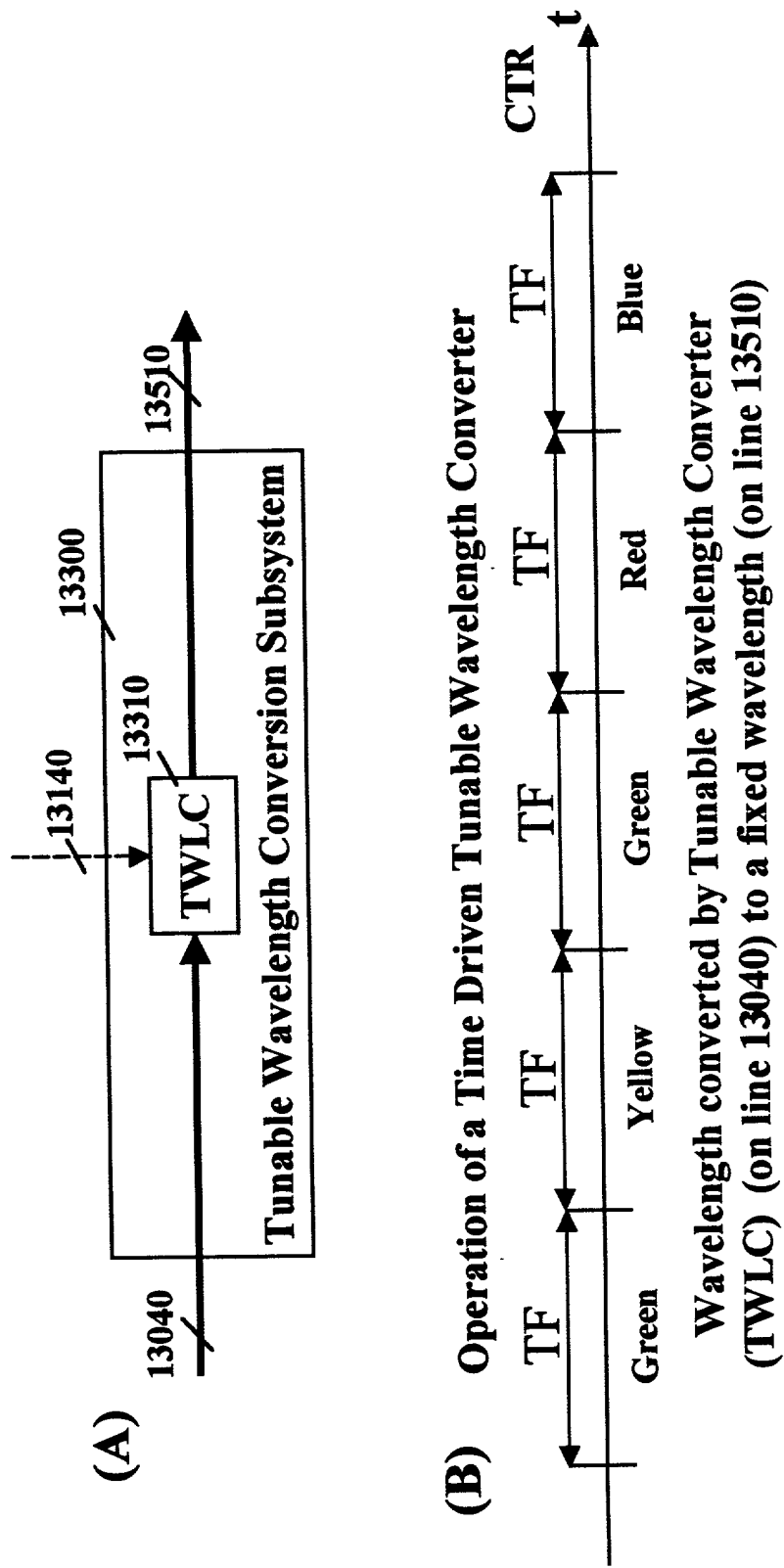


FIG. 18

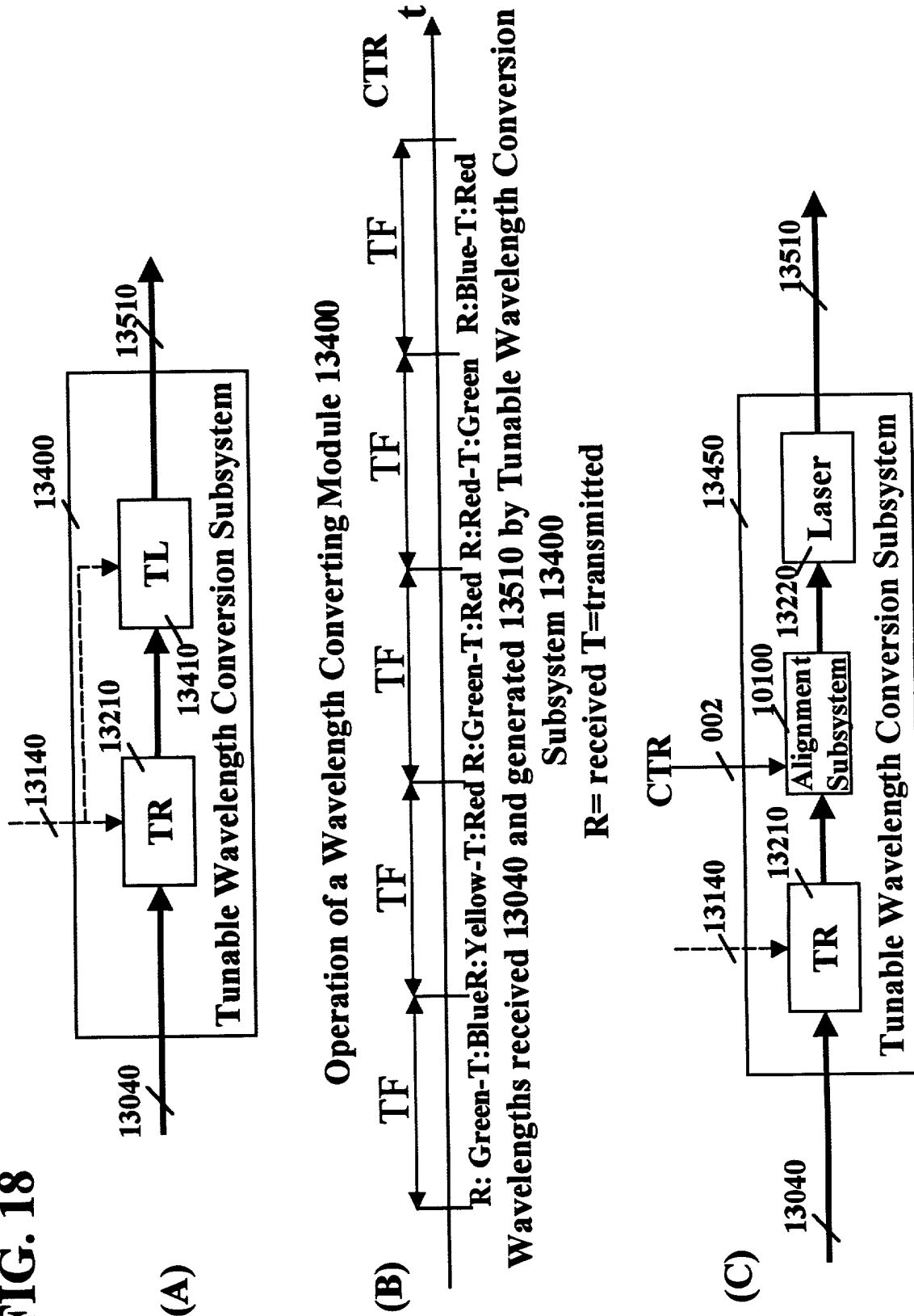


FIG. 19

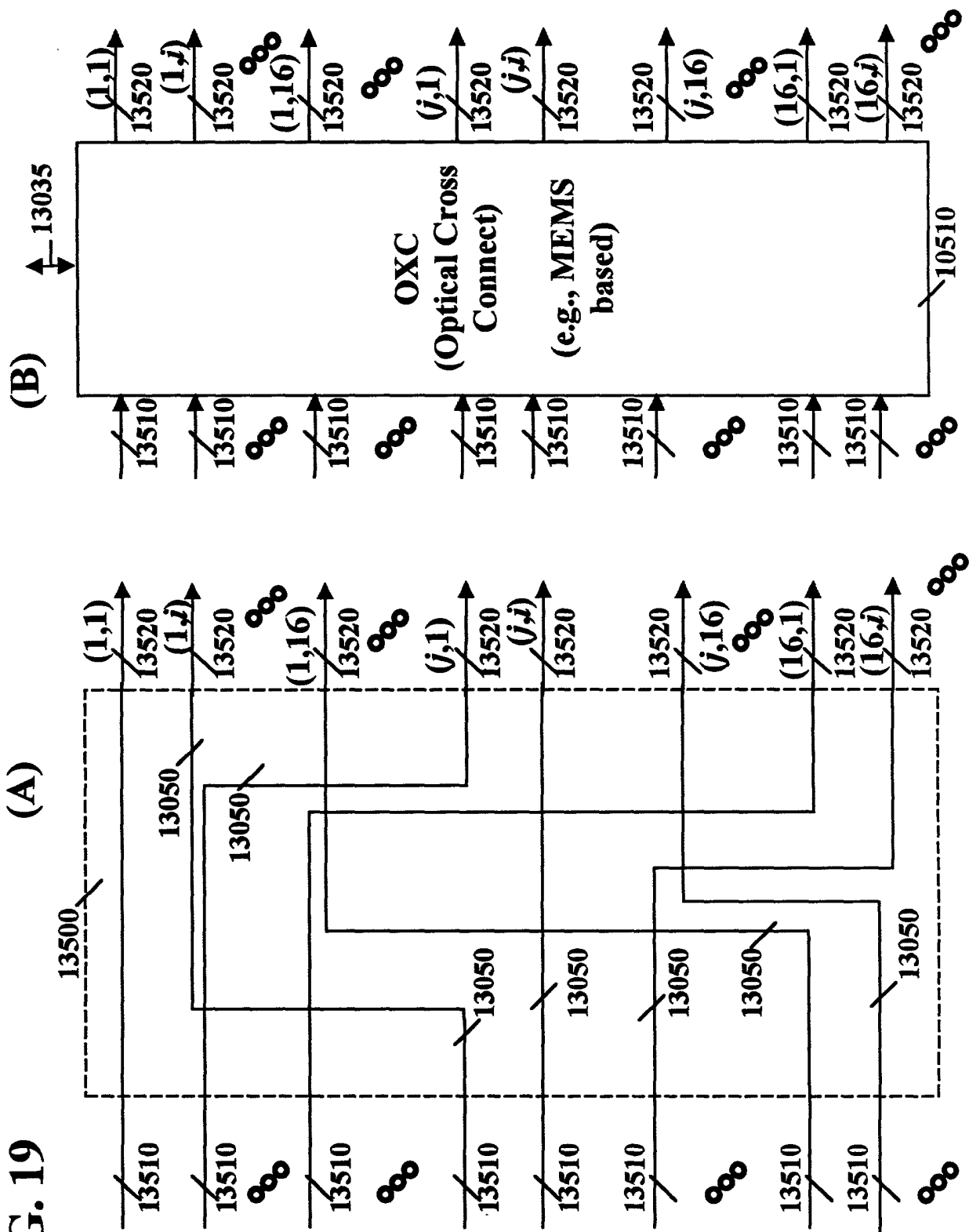


FIG. 20

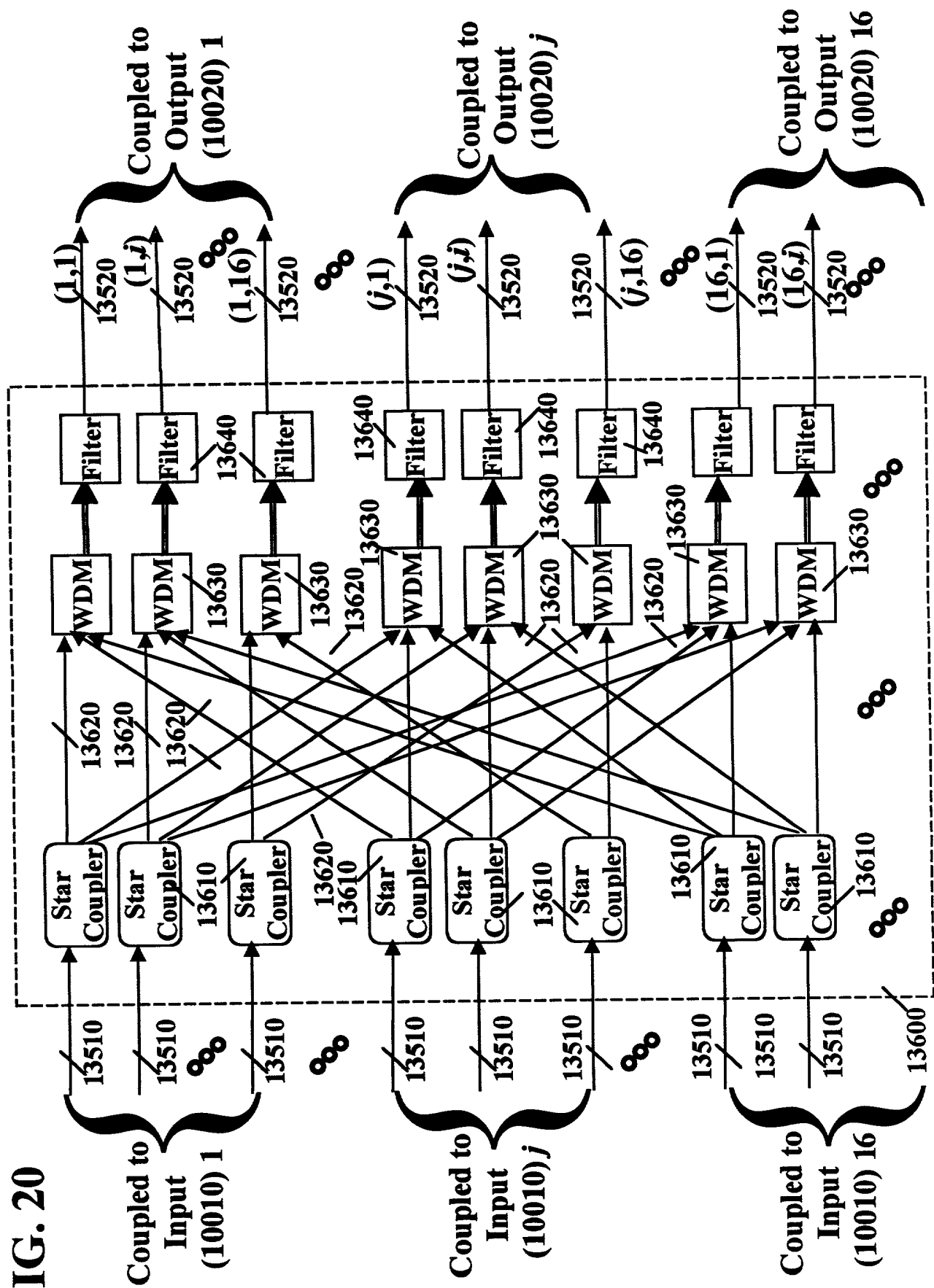


FIG. 21

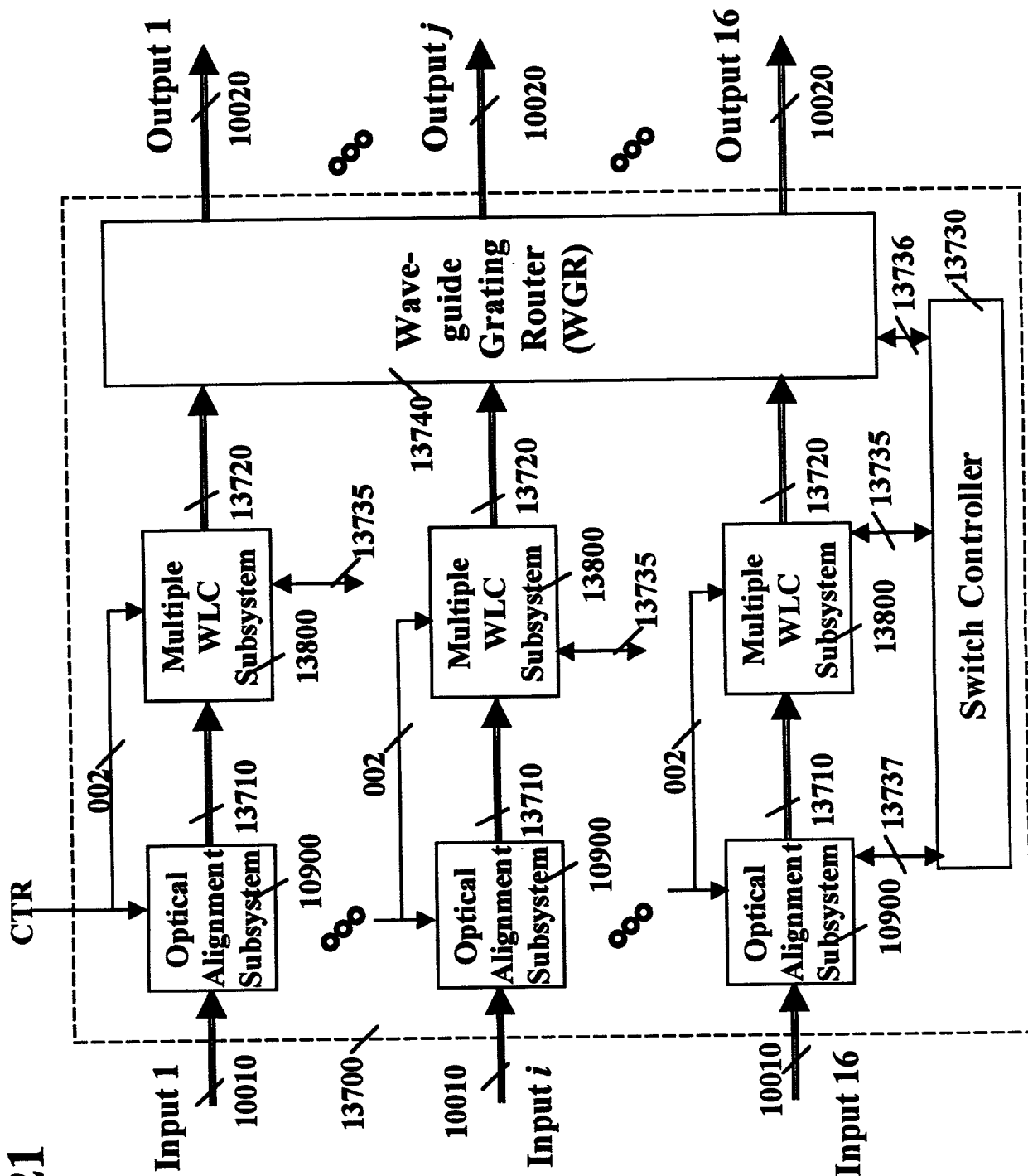
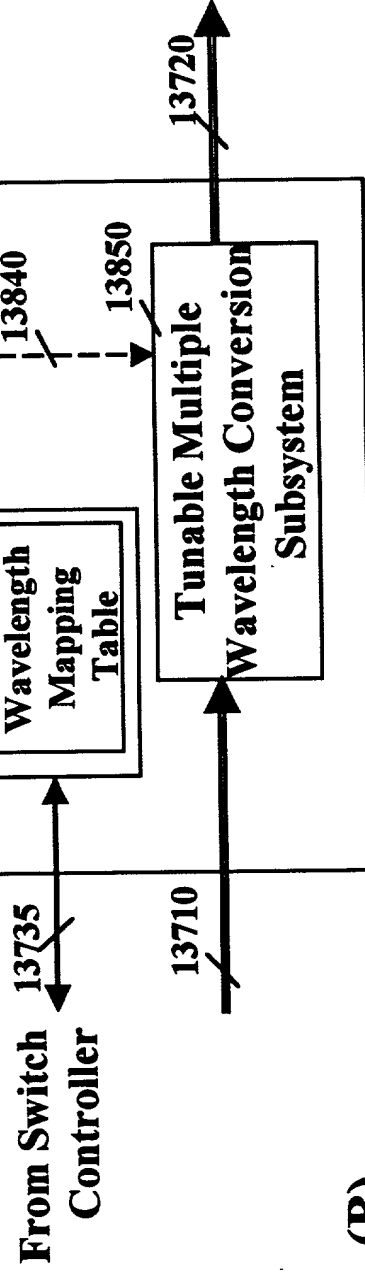


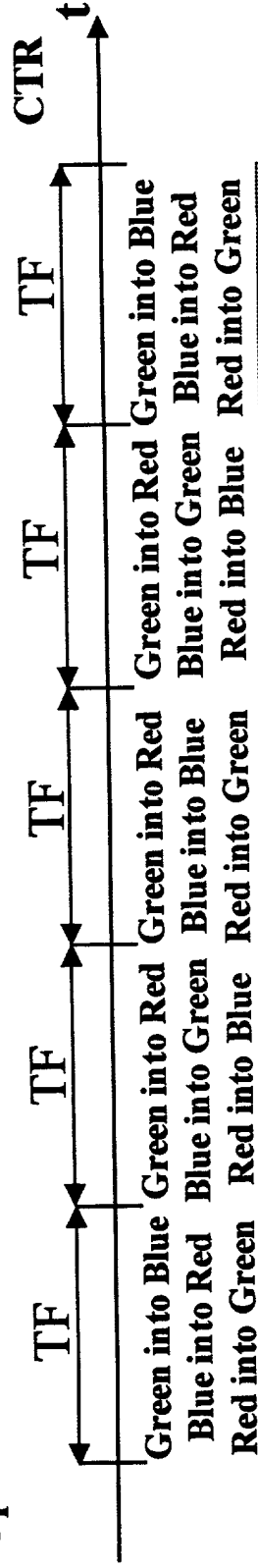
FIG. 22
Common Time Reference - CTR/UTC

(A)



(B)

Operation of a Time Driven Tunable Multiple Wavelength Conversion Subsystem 13850



**Wavelengths received 13710 and emitted 13720
 by a Tunable Wavelength Conversion Subsystem 13850**

FIG. 23

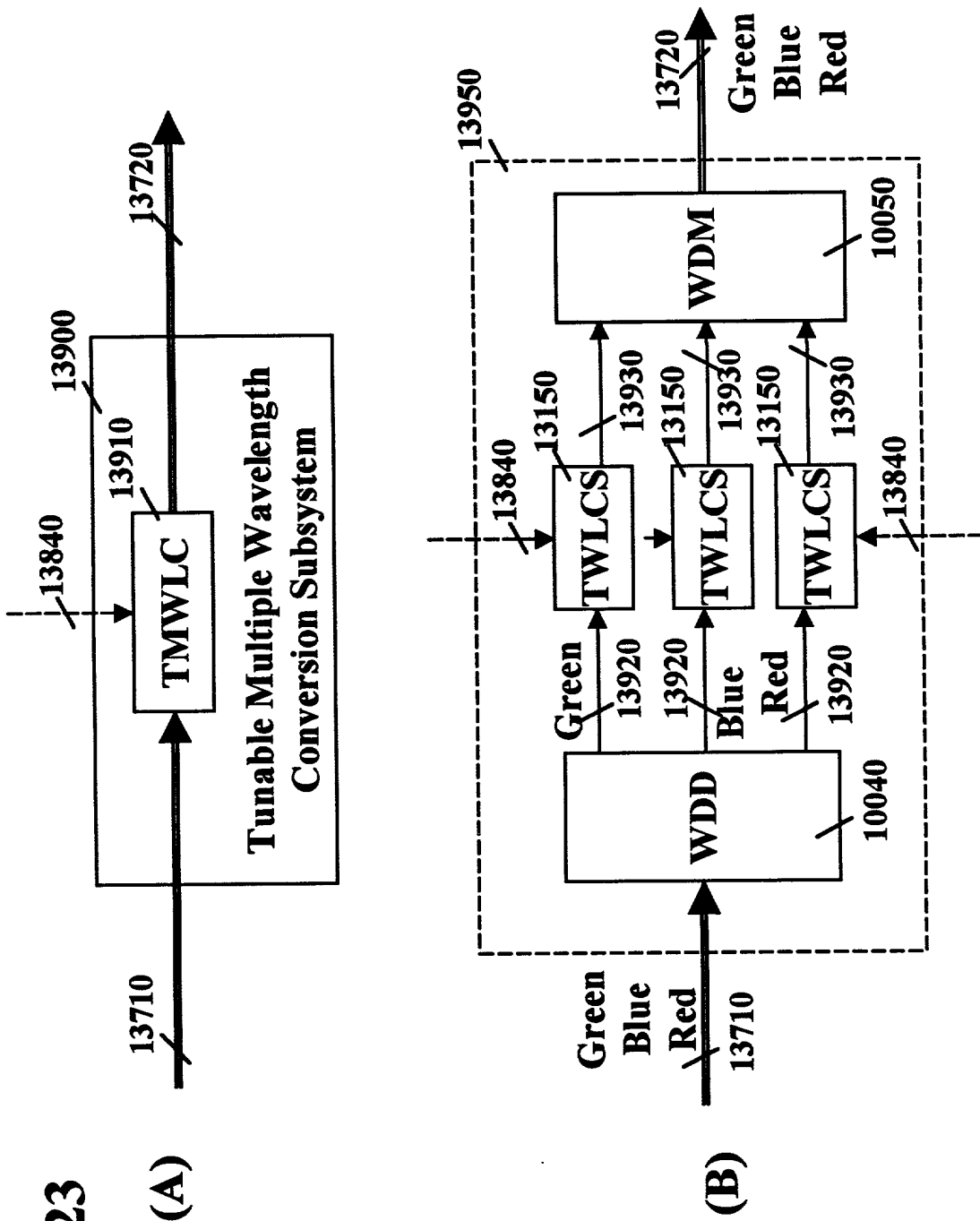


FIG. 24

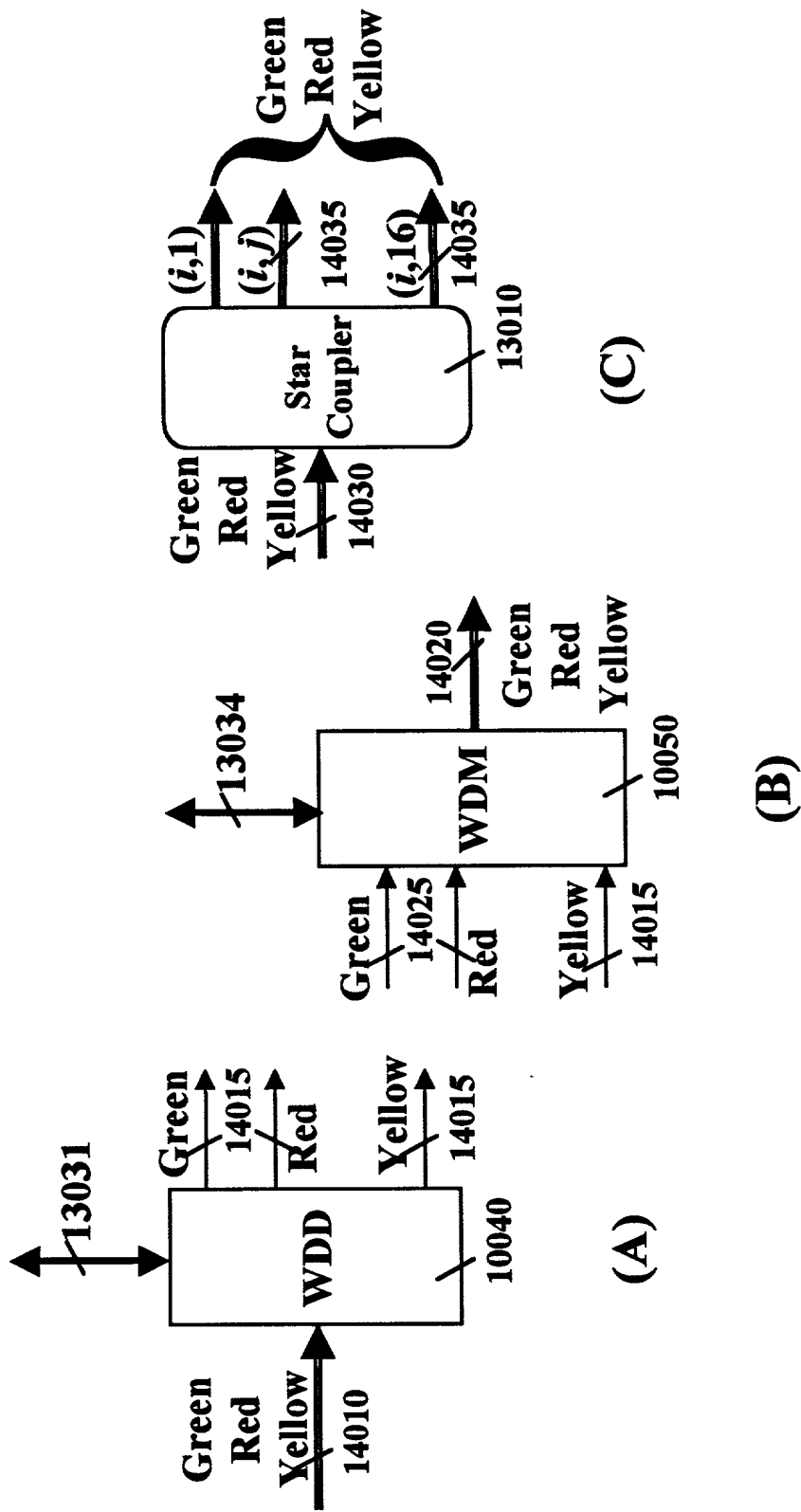


FIG. 25

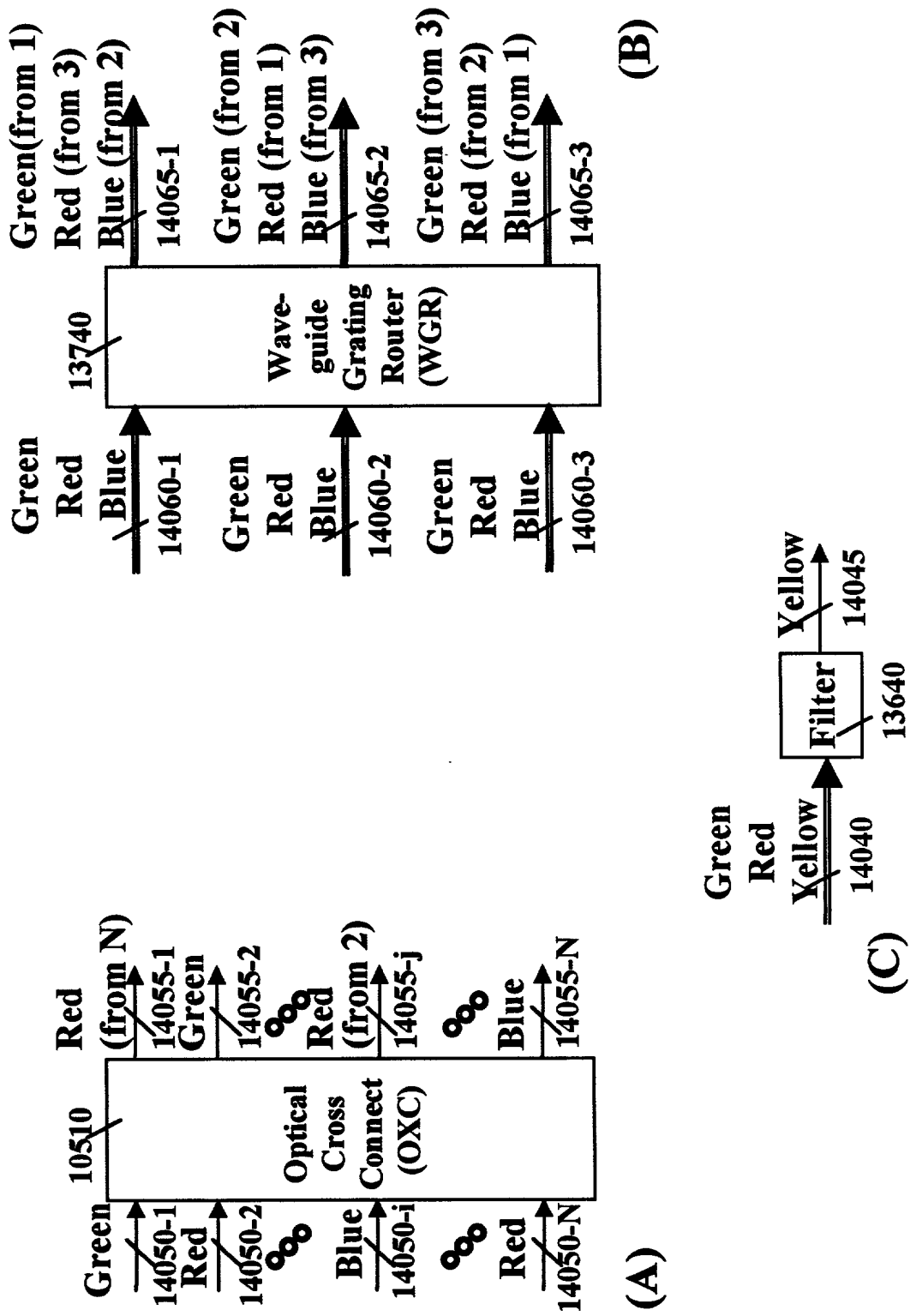


FIG. 26

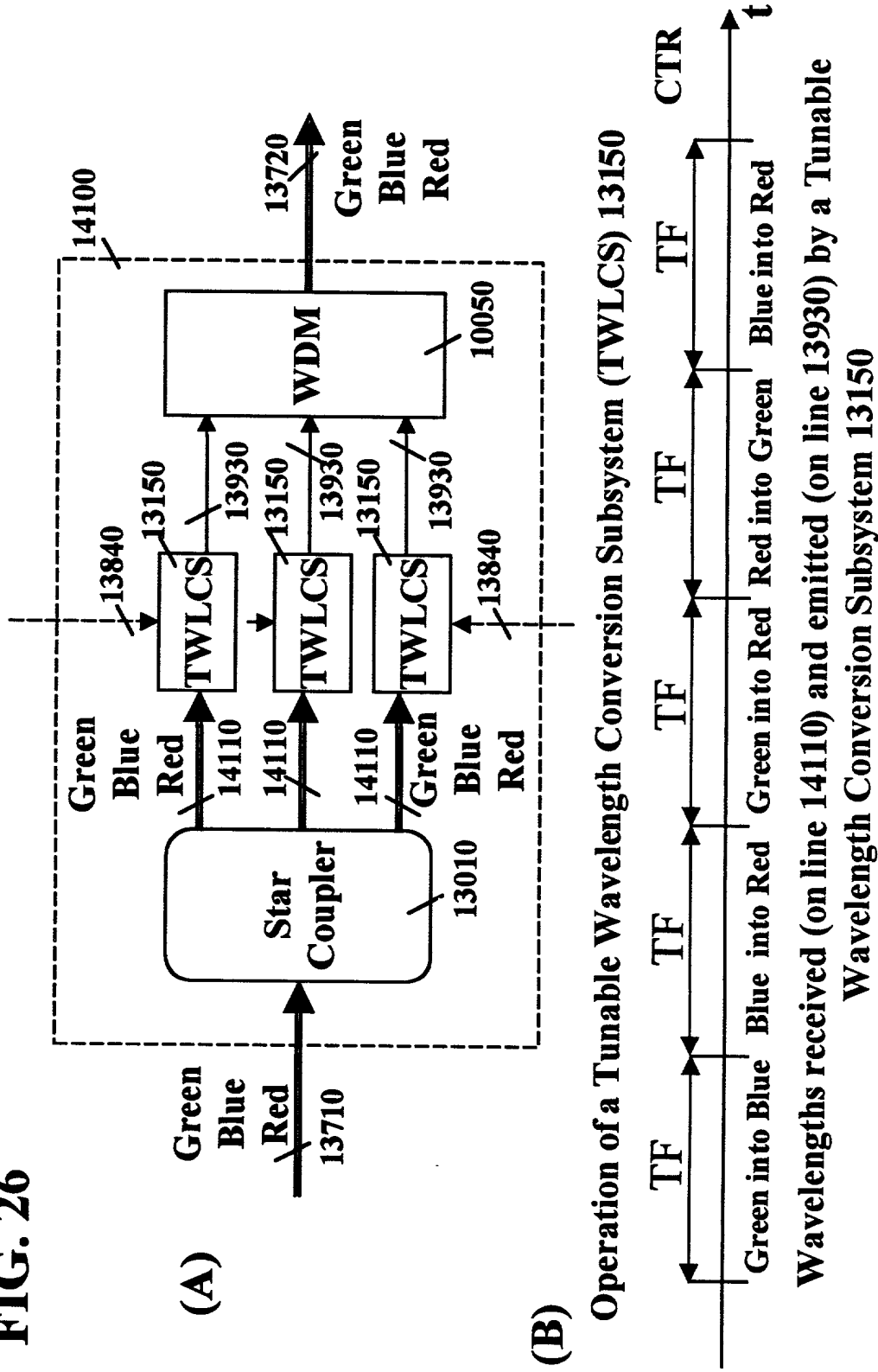


FIG. 27

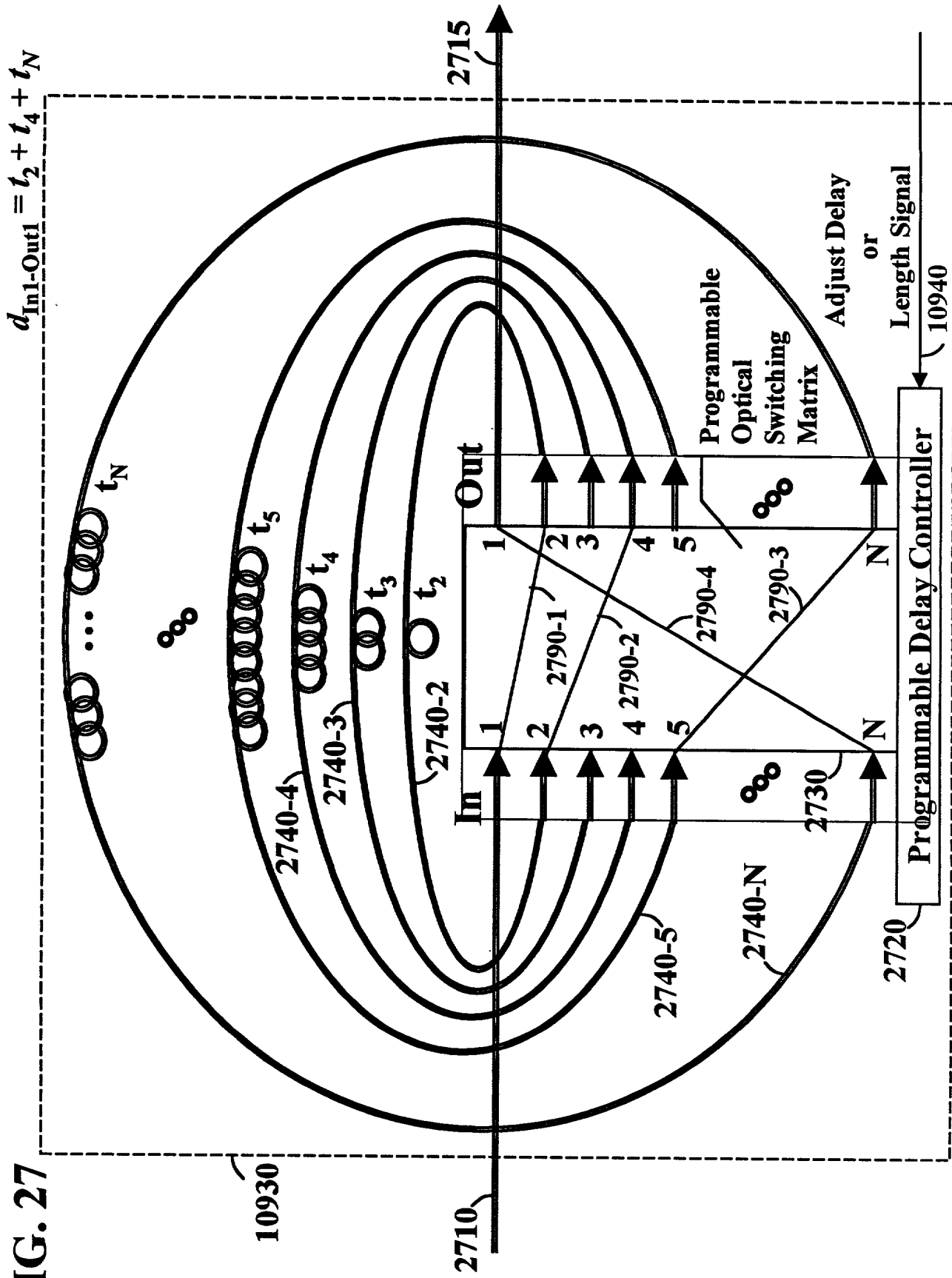
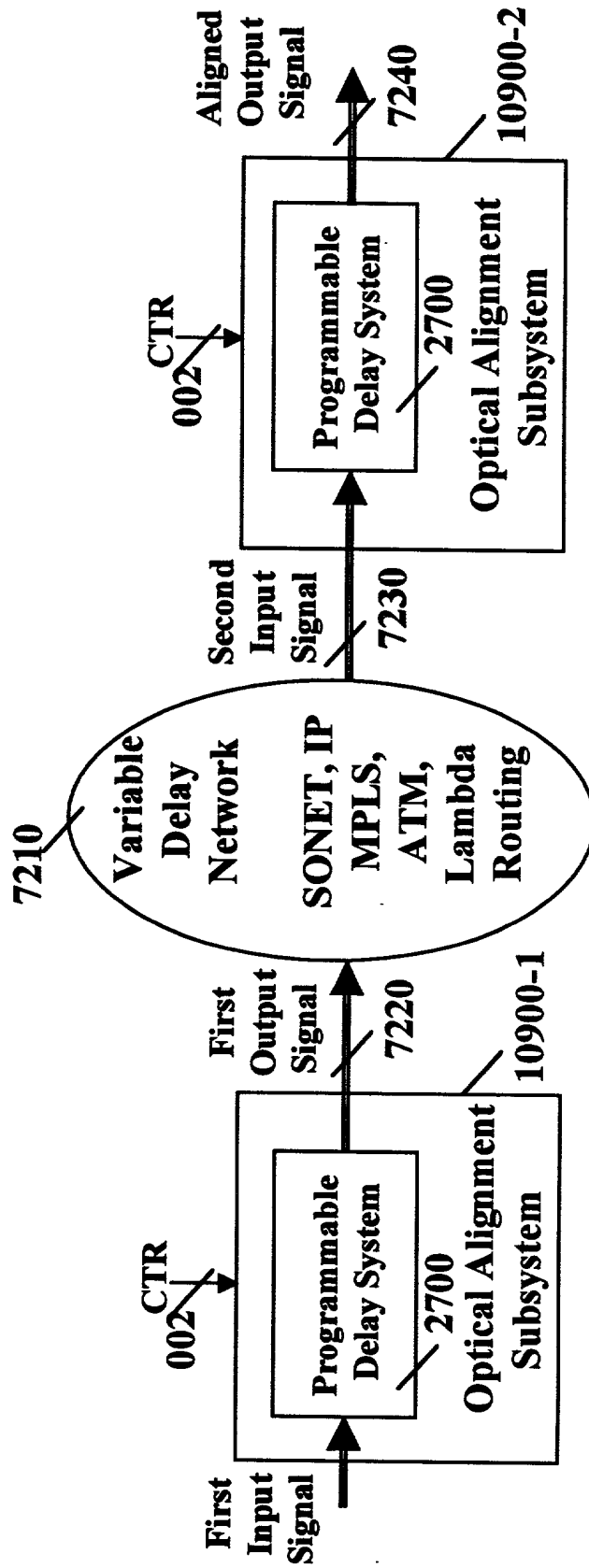


FIG. 28



Delay between the output of the 2 programmable delay lines is integer number of time frames

FIG. 29

TF Alignment of UTR(i) to UTC - with three input queues - principle of operation:
 The same queue is not used simultaneously for:
 1. Receiving data packets from the serial link, and
 2. Forwarding data packets to the switch

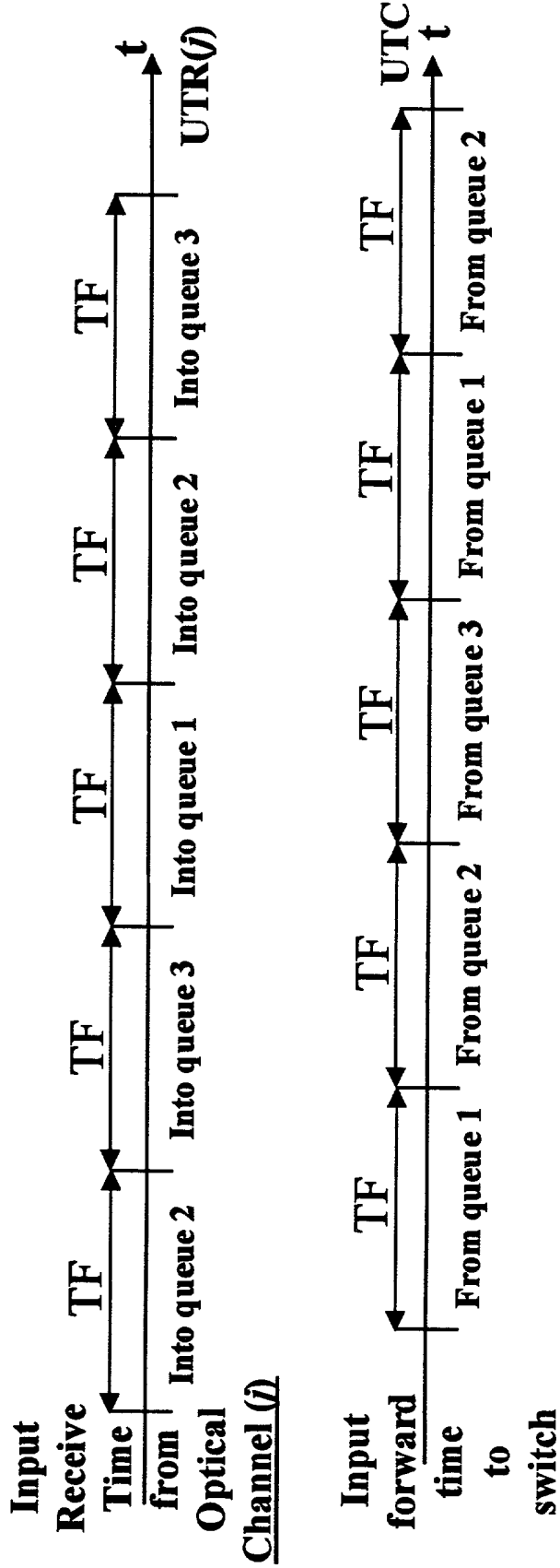
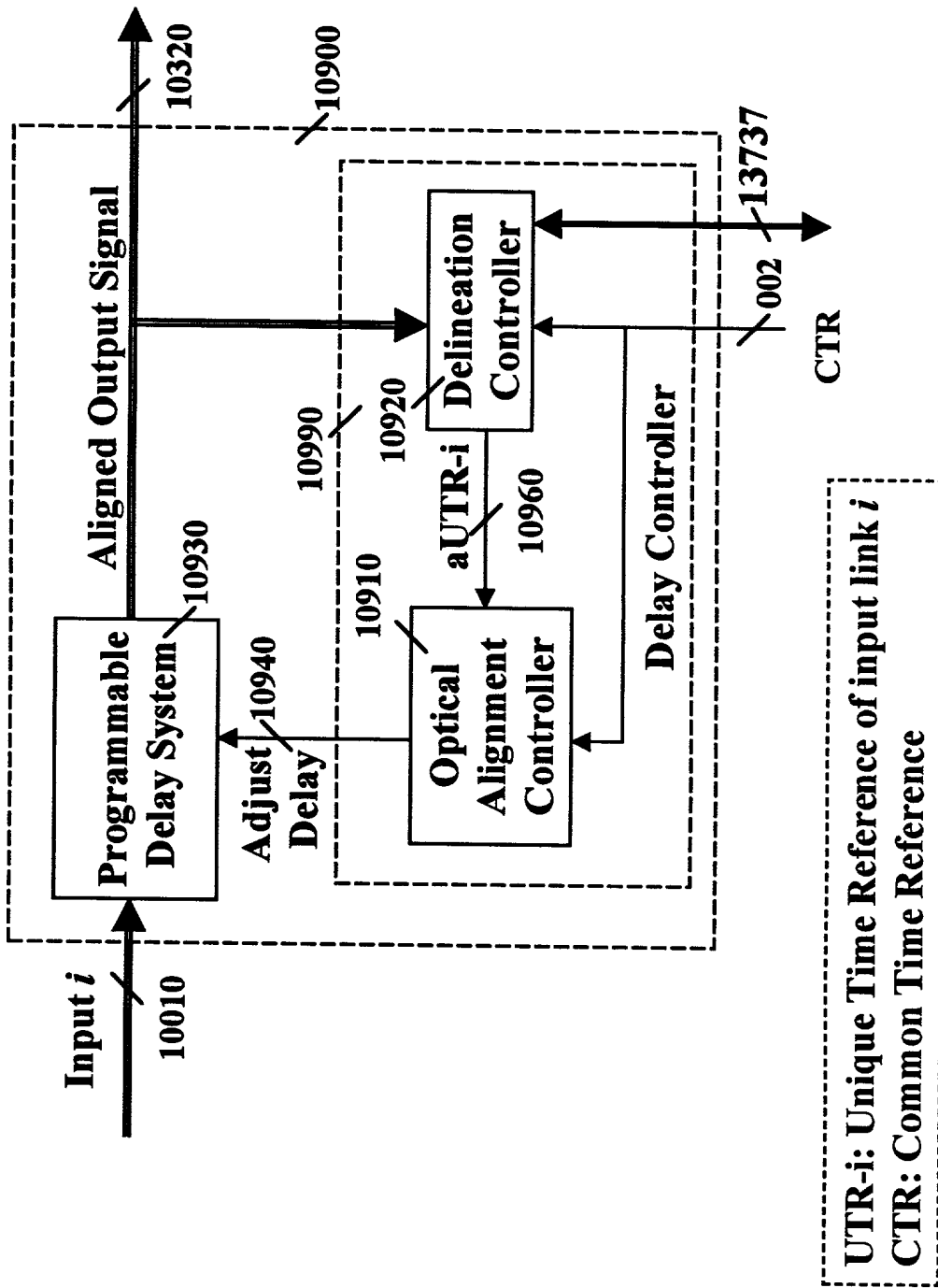
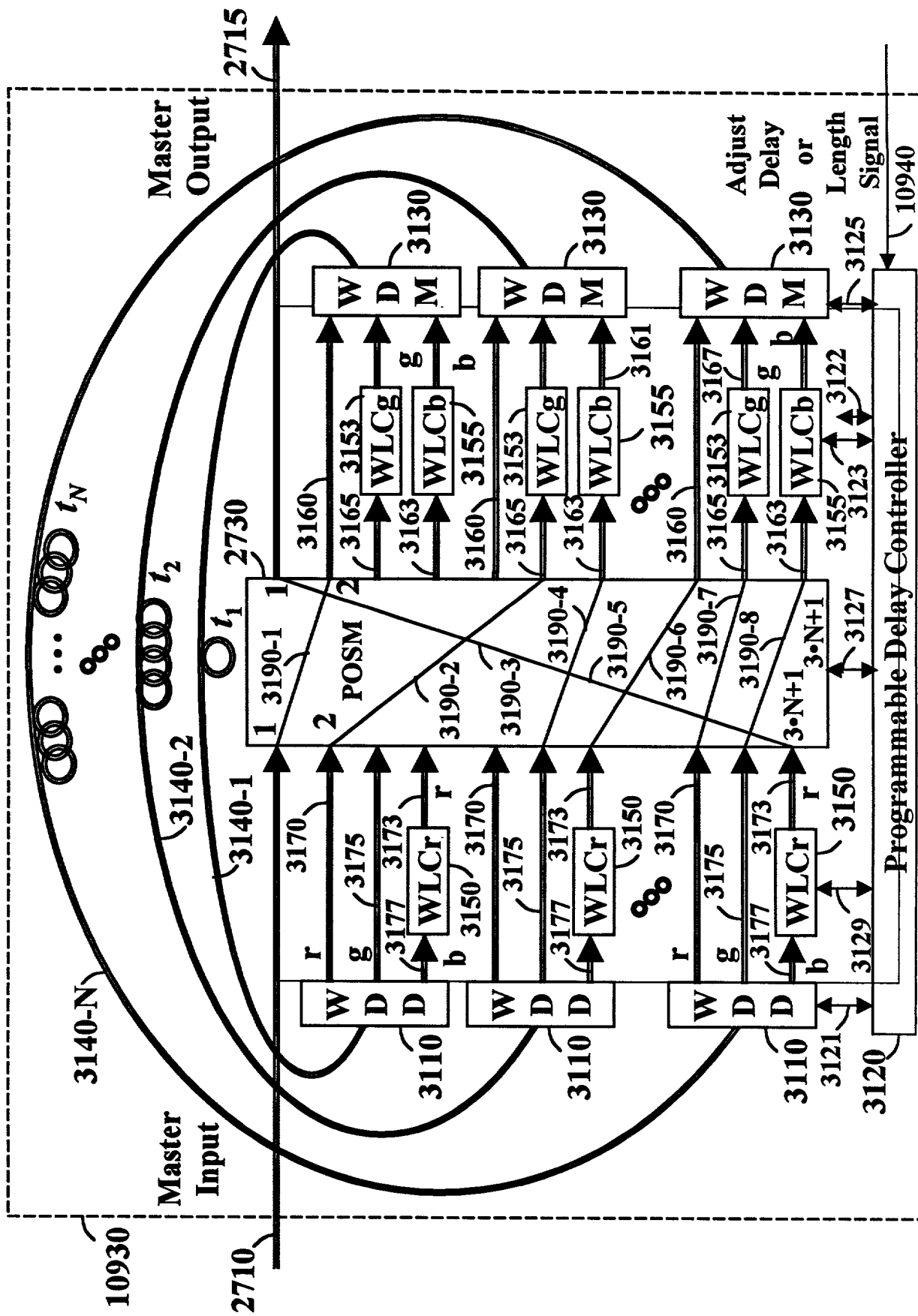


FIG. 30



POSM: Programmable Optical Switching Matrix

$$d_{\text{In1-Out1}} = t_1 + 2 \cdot t_2 + 3 \cdot t_N$$



POSM: Programmable Optical Switching Matrix

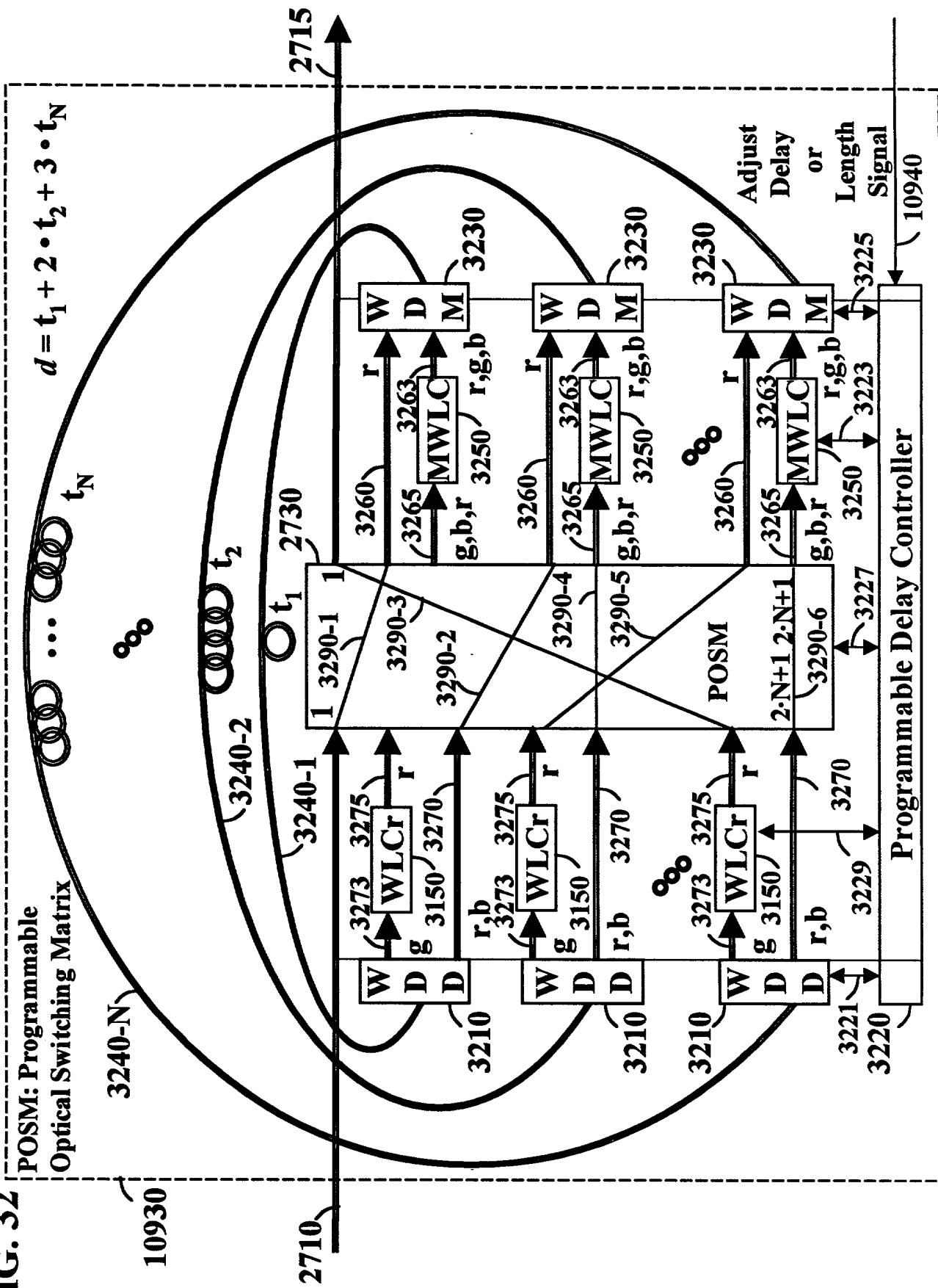
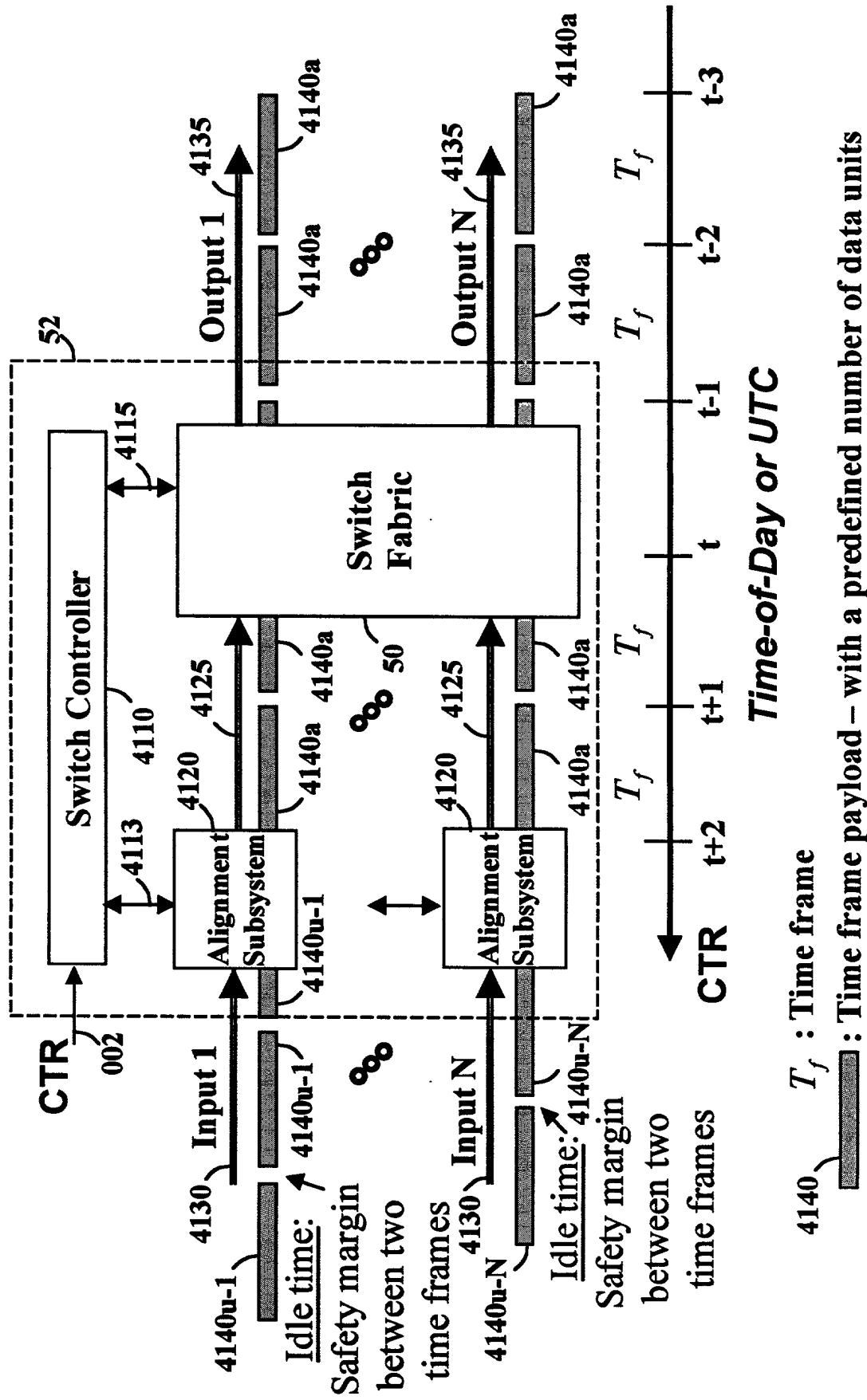
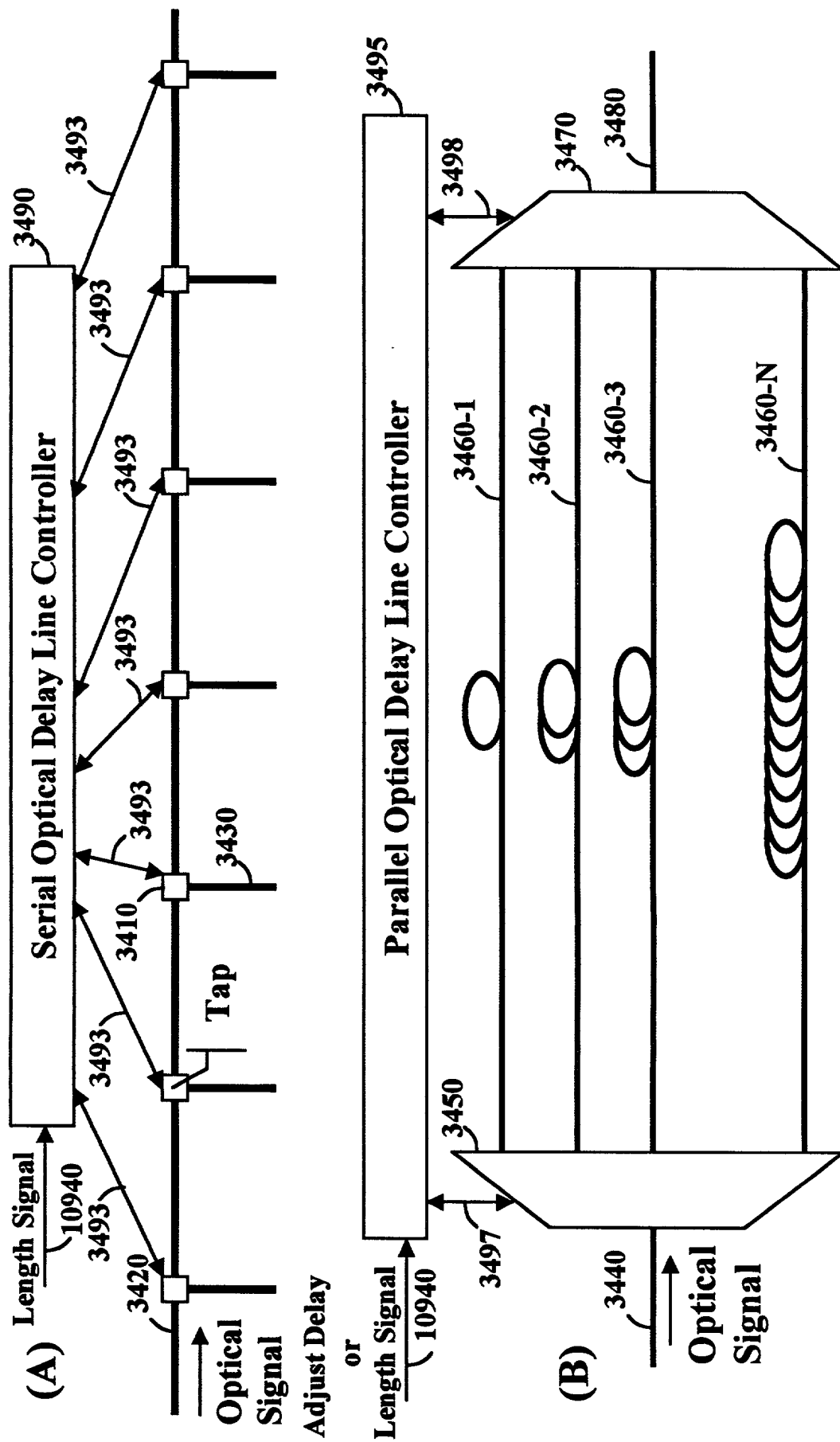


FIG. 33



Adjust Delay
or



POWSM: Programmable Optical Wavelength Switching Matrix

